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1974-1975

IVTC
INDIANA VOCATIONAL
TECHNICAL COLLEGE

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IVTC
INDIANA VOCATIONAL
TECHNICAL COLLEGE

COLLEGE CALENDAR 1974-1975

		Summer Quarter, 1974 (58 academic days)
°W-F	June 19-21	Registration for Summer Quarter
°Mon.	July 1	Classes begin — Late Registration starts
Th-F	July 4-5	Independence Day Holiday
Tues.	July 9	Late Registration ends
Mon.	Sept. 2	Labor Day
°Fri.	Sept. 20	Summer Quarter ends
		Fall Quarter, 1974 (57 academic days)
°M-F	Sept. 23-27	Registration and Orientation
°Mon.	Sept. 30	Classes begin — Late Registration Starts
Fri.	Oct. 4	Late Registration ends
Mon.	Oct. 14	Discovery Day
Mon.	Nov. 11	Veteran's Day
Th-F	Nov. 28-29	Thanksgiving Holiday
°Tues.	Dec. 17	Classes end
°W-F	Dec. 18-20	Registration for Winter Quarter
		Winter Quarter, 1975 (57 academic days)
°Mon.	Jan. 6	Classes begin — Late Registration Starts
Fri.	Jan. 10	Late Registration ends
°Tues.	Mar. 25	Classes end
°W-F	Mar. 26-28	Registration for Spring Quarter
		Spring Quarter, 1975 (56 academic days)
°Mon.	Mar. 31	Classes begin — Late Registration starts
Fri.	Apr. 4	Late Registration ends
Mon.	May 26	Memorial Day
°Tues.	June 17	Classes end
°W-F	June 18-20	Registration for Summer Quarter
		Summer Quarter, 1975 (56 academic days)
°Mon.	July 7	Classes begin — Late Registration starts
Fri.	July 11	Late Registration ends
Mon.	Sept. 1	Labor Day
°Tues.	Sept. 23	Classes end
°M-F	Sept. 22-26	Registration and Orientation for Fall Quarter

°Persons planning to enroll in Practical Nursing Programs at South Bend, Terre Haute, Lafayette, or Columbus should contact the regional institute for registration dates and dates classes begin and end. These dates may vary from those published here.

NOTE: Registration for any given quarter will be accepted at any time during the preceding quarter. Late registration for any quarter will be accepted during the first week of classes in that quarter.

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INDIANA VOCATIONAL TECHNICAL COLLEGE
Regional Offices

NORTHWEST — REGION 1
Indiana Vocational Technical College
1440 East 35th Avenue
Gary, Ind. 46409
Phone 219 / 887-9646

SOUTH BEND — REGION 2
Indiana Vocational Technical College
1534 West Sample Street
South Bend, Ind. 46619
Phone 219 / 289-7001

FORT WAYNE — REGION 3
Indiana Vocational Technical College
1711 Maumee Avenue
Fort Wayne, Ind. 46803
Phone 219 / 423-3573

LAFAYETTE — REGION 4
Indiana Vocational Technical College
616 Wabash Avenue
Lafayette, Ind. 47905
Phone 317 / 423-1533

KOKOMO — REGION 5
Indiana Vocational Technical College
3717 South Reed Road
Kokomo, Ind. 46901
Phone 317 / 453-5880

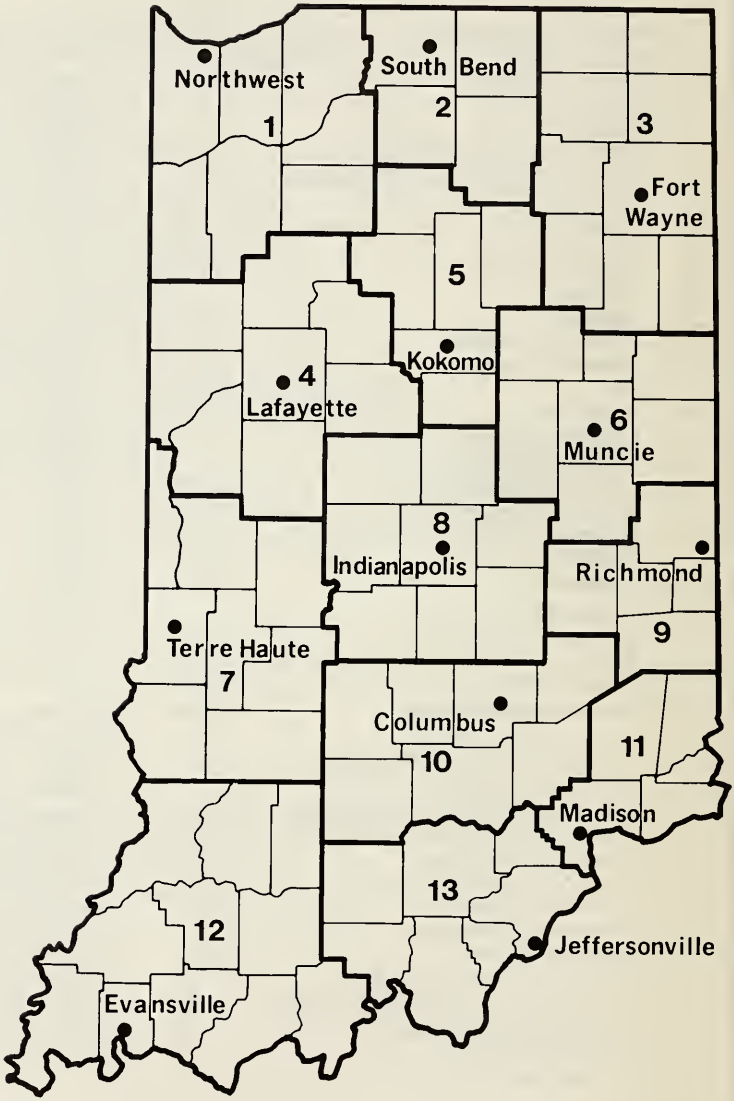
MUNCIE — REGION 6
Indiana Vocational Technical College
1300 South Liberty Street
Muncie, Ind. 47302
Phone 317 / 289-2291

TERRE HAUTE — REGION 7
Indiana Vocational Technical College
R.R. 22, Box 450
Terre Haute, Ind. 47802
Phone 812 / 299-1121

INDIANAPOLIS — REGION 8
Indiana Vocational Technical College
1315 East Washington St.
Indianapolis, Ind. 46202
Phone 317 / 635-6100

RICHMOND — REGION 9
Indiana Vocational Technical College
710 Northwest 5th Street
Richmond, Ind. 47374
Phone 317 / 966-5944

COLUMBUS — REGION 10
Indiana Vocational Technical College
646 Franklin Street
Columbus, Ind. 47201
Phone 812 / 372-9925



MADISON — REGION 11
Indiana Vocational Technical College
First and Broadway
Madison, Ind. 47250
Phone 812 / 265-2580

EVANSVILLE — REGION 12
Indiana Vocational Technical College
3501 First Avenue
Evansville, Ind. 47710
Phone 812 / 426-2865

JEFFERSONVILLE — REGION 13
Indiana Vocational Technical College
510 Spring Street
Jeffersonville, Ind. 47130
Phone 812 / 288-6607

PRESIDENT'S MESSAGE

Indiana Vocational Technical College, now in its 12th year, offers a wide variety of occupational programs and courses designed to prepare young men and women with job skills needed for initial employment and to improve or upgrade the skills of those already employed. IVTC is unique insofar as Indiana's higher educational system is concerned in that its programs are conducted out of thirteen regional institutes, geographically distributed throughout the State to accommodate the greatest number of students with the least inconvenience and expense to them.

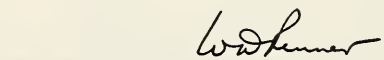
In this age of specialization and technology, employment leading to a rewarding and successful career demands that the job-seeker have a saleable skill. Not only does one having a job skill find it easier to locate employment, but lifetime earnings are substantially improved because the skilled employee has more opportunities for promotion or is more likely to remain employed than the person lacking skills.

"Ivy Tech" offers valuable educational opportunities to a broad cross section of Indiana citizens. It serves those who have left high school without a diploma or without occupational training; it serves not only the university "stop-out" but also the university graduate wishing to learn a skill. It also serves the military veteran and the employed who wish to acquire added job knowledge for promotion in their work. IVTC is truly an open-admission College.

Because the College serves students with a wide variety of educational backgrounds and work experiences, its programs are designed to be highly flexible. The College recognizes the value of previous experience by providing for advanced standing wherever possible. It offers a number of skills-advancement subjects for those who need to improve upon their educational and vocational experiences. The programs are also structured to provide worthwhile employment opportunity "exits" at every possible point for those students who find it necessary, or desirable, to locate full-time employment as quickly as possible.

The College is supported in part by appropriations from the General Assembly and in part from student fees. Loan programs, scholarships and grants put Ivy Tech within reach of anyone having the desire to learn. Because it has training centers physically located in every part of Indiana, students can continue to live and work part-time in their home communities which further reduces the cost of their education.

I urge you to carefully examine the offerings of the College and counsel with the administration and faculty at your nearest regional institute. You will find the staff truly interested in helping you to reach your chosen goals.



W. Dwight Renner, *President*

THE COLLEGE

Indiana Vocational Technical College believes that each individual, regardless of economic or social status, should be provided the opportunity to develop to his and society's ultimate benefit.

The College believes that post-secondary occupational education is an increasing necessity for an ever-growing portion of the citizens of Indiana. IVTC demonstrates the intent of the General Assembly of the State of Indiana by providing occupational education through a coordinated system of regional institutes, located throughout the state.

Indiana Vocational Technical College believes in technical and related education integrated as necessary throughout the occupational curriculum to enable students to develop self-awareness and social responsibility to successfully compete in a chosen occupational field.

The College believes in directing its programming to serve the needs of the individual within his community as well as the needs of the community as a whole.

From this philosophical base, the following objectives are established for the Indiana Vocational Technical College system:

1. Consistent with the manpower needs of the State of Indiana, the College will offer relevant occupationally oriented post-secondary education and training to develop its students to the desired level of competence.
2. The College will offer occupationally oriented continuing education and training consistent with the identified needs of interested groups in the State of Indiana.
3. Consistent with the individual student's interest, needs, and abilities, the College will offer in a wide range of meaningful occupationally oriented programs multiple entry and exit opportunities in a continuum of education and training for each of its regions.
4. The College will strive to provide the opportunity for citizens of the State to gain occupational competence regardless of their financial resources, previous educational experiences or geographic location.
5. The College will provide the opportunity for each applicant to gain occupational competence regardless of age, race, sex or religious affiliation.
6. The College will encourage throughout the State of Indiana the development of understanding, acceptance, and support for occupationally oriented education and training and will communicate the valuable contribution it makes to the individual, community, State, and the Nation.
7. The College will prudently utilize all its resources to carry out its legislatively-mandated mission in an accountable manner.
8. The College will provide within each program offering, educational and training experiences supportive of the social, cultural, and personal development of the individual designed to enhance the opportunities for obtaining and retaining gainful employment.
9. The College will cooperate and strive for coordination among all providers of occupationally oriented training and education in all educational sectors, as appropriate.
10. The College will continue to develop a dynamic and flexible delivery system capable of adapting its offerings to meet the changing technological and socio-economic needs of the community, State and Nation.

THE STUDENT
ADMISSION REQUIREMENTS AND PROCEDURES

Campus Visits

Visits to regional institutes are encouraged. It is recommended that the interested student visit the prospective facility before an application is filed.

College Year

The college year consists of 12 months divided into four quarters. It is possible to enter some programs at the beginning of each quarter. Most programs start in September.

Admission Policy

The College has an "open door" admission policy for citizens of the State of Indiana. The College provides for admission of any person regardless of sex, race, creed or national origin, in accordance with Title VI, Civil Rights Acts of 1964. Citizens of other states may be admitted provided that they pay tuition in addition to the general fees charged Indiana residents, and that they do not displace an Indiana citizen.

The College also defines "open door" admission to mean that the doors of the College are open to all above the usual high school age and to those who have permanently withdrawn from high school and are above 16 years of age. The College reserves the right to suggest the program and course of study that best meets the student's objectives and needs.

General Admission Requirements

To be admitted to the College, a student must meet one of the following criteria:

1. Be a graduate of high school, or
2. Have successfully completed a high school equivalency examination, or
3. Have demonstrated an interest in and need for post-secondary occupational education as offered by the College.

To obtain full-time standing, the student must have on file in the regional institute of his choice a completed application and, when the selected program requires, should have a completed health examination form signed by his physician.

At the option of the student who wishes assistance in making his selection of career training, the College offers to each full-time student the Comparative Guidance and Placement test administered by the College. A fee of $5 is charged to cover the cost of the test. The focus of C.G.P. program is the guidance of students, not selection for admission. Its purposes are:

- to help students examine their interests and abilities in relation to the educational options open to them, so they can make informed plans for their careers and courses.
- to provide the counselor or faculty advisor with a profile of each student as an individual so the counselor can help him plan an appropriate program.
- to analyze the student body, and groups within it, enabling the College to plan programs to meet the needs of its students.

Skill testing will occur to identify each student's needs and to assist him in planning courses.

Entrance Procedure for Full-Time Students

1. Contact the selected regional institute for official application forms.
2. Complete the forms and return them to the chosen regional institute Office of Student Services.
3. Provide an official transcript of his high school record to the regional institute. Official transcripts from any college or other post-secondary high school institution previously attended must also be sent to the regional institute.
4. Opportunity to take Comparative Guidance and Placement test.
5. Provide evidence of a recent physical examination from family physician when required.
6. Make arrangements for paying the fees due at time of official registration. Contact the Office of Student Services if you need assistance.

TRANSFER CREDIT

Transfer students must meet the general admission requirements of the College.

A student may be admitted from other recognized colleges and universities with such transfer credits as his previous record may warrant insofar as his credits fit the program of studies chosen at Indiana Vocational Technical College. Such students must have an official transcript sent directly from the previous institution attended. The College reserves the right to either refuse admission or conditionally accept students who have been dismissed from other colleges or universities for disciplinary reasons.

COLLEGE FEES

The College seeks to provide quality training at the lowest possible cost. As a state assisted educational

institution, fees paid by the student cover only a minor part of the operating costs of the College. No tuition is charged students who are residents of the State of Indiana. All out-of-state students are required to pay a tuition fee in addition to the General Service Fee.

SCHEDULE OF FEES
(Per Quarter)

In-State Students

Full-time (12 credits or more)	
General Fee	$ 120
Ancillary Fee	27
Student Activity Fee (°) Maximum	3
Part-time (Fewer than 12 credits)	
General Fee per credit	$10.00
Ancillary Fee per credit	2.25
Student Activity Fee per credit (°) Maximum	.25

Out-of-State Students

Full-time (12 credits or more)	
Tuition	$ 120
General Fee	120
Ancillary Fee	27
Student Activity Fee (°) Maximum	3
Part-time (Fewer than 12 credits)	
Tuition per credit	$10.00
General Fee per credit	10.00
Ancillary Fee per credit	2.25
Student Activity Fee per credit (°) Maximum	.25

(°) Actual Activity Fee will be at the discretion of the Regional Board of Trustees, but will not exceed the maximums indicated above.

Laboratory and expendable-supply fees, where applicable, are additional to the fees listed above.

Refund of Fees — Non Veteran

Refund policies for degree credit courses of the College, as specified below, pertain to all monies collected toward registration of the student.

Official Withdrawal From College

First Week — If a registered student withdraws after registration, but before the end of the first week of classes, the College will retain $20 and refund all other fees paid.

Second Week — If a student withdraws during the second week of classes, the College will retain 50% of total fees assessed or $20.00, whichever is larger, and refund all other fees paid.

Thereafter — No refunds will be made.

Upon official withdrawal from the College within the two-week refund period, deferred fees will be cancelled.

Partial Withdrawal From Individual Courses

First Week or Until Late Registration Ends (whichever is later) — 100% of fees assessed and paid attributable to the course being dropped will be refunded.

Thereafter — No refunds will be made.

Summary Schedule of Refunds

	Refund for Complete Withdrawal	Refund for Partial Withdrawal
From registration until the end of the first week of classes, or until late registration ends	All but $20.00 of any fees collected	100%
Until the end of the second week of classes	All except 50% of fees assessed or $20.00, whichever is larger.	None
Thereafter	None	None

The effective date for calculation of the refund will be the date that the written notification for official withdrawal is filed in the Office of Student Services.

Ancillary Service Fees

This fee may be assessed to cover the cost of such services as facilities development, health services, and replacement of library learning resources materials used up by the student.

Laboratory Fees

Laboratory fees cover the cost of replacement of expendable supplies used in instruction.

Graduation Fee

A student making known at the beginning of his final quarter his intent to graduate will be charged a fee of $10.

FINANCIAL AIDS

The College recognizes that educational opportunities are limited for many students because of the student's lack of financial resources. It is the policy of the College to administer financial assistance to worthy and deserving students who have a demonstrated financial need.

Financial aid administered by the College includes scholarships, grants, loans and part-time employment. The Office of Student Services has the responsibility for the financial aids program of the College. The College participates in the College Scholarship Service (CSS) and subscribes to the principle that financial aid is granted to students based on their financial need. Through the confidential statements submitted by the

parents of dependent students or received from independent students, the CSS assists the College in analyzing the student's need for financial assitance.

Students should contact the Office of Student Services for assistance with financial aid.

TYPES OF FINANCIAL AID AVAILABLE

College Work-Study Program

The work-study program enables the College to assist needy students with part-time work while furthering their education. The normal workload is 15 hours per week. Employment may be on campus or in the community performing jobs in the public interest. Contact the Office of Student Services for assistance.

Part-Time Employment

Inquiries regarding part-time employment should be directed to the Office of Student Services. This office maintains information concerning jobs available in the community.

Supplemental Educational Opportunity Grant

The Supplemental Educational Opportunity Program (SEOG) provides Federal assistance to exceptionally needy students. Total awards range from $200 to $1500 per year; the amount of aid must be matched by the College with other sources of aid (usually scholarships, grants and/or part-time employment). Contact the Office of Student Services for assistance.

Basic Educational Opportunity Grant

The Basic Educational Opportunity Grant program (BEOG) is a Federal aid program designed to provide financial assistance to needy students entering post-secondary programs at eligible institutions for the first time after April 1, 1974. Continuing grants will be issued to currently eligible students. Contact the Office of Student Services for assistance.

Military Veterans

The College has been approved for veteran training. In order to receive benefits, the veteran must make application for and receive a certificate of eligibility from the VA Regional Office which is then presented to the College. Applications for eligibility should be made with the VA Regional Office at least 30 days prior to the date the student plans to enroll.

Educational benefits for orphans of veterans and vocational rehabilitation of veterans are also processed by the VA Regional Office.

A refund of the unused portion of tuition, fees, and other charges will be made to veterans or eligible persons who fail to enter or fail to complete the course as required by Veterans Administration regulations. The refund will be within 10 percent of an exact pro-rata fund. No more than $10 of the established registration fee will be retained if a veteran or eligible person fails to enter the course. Veterans should contact the Office of Student Services for assistance.

Federally Insured Student Loans

The Federally Insured Student Loans program (FISL) makes it possible for students to borrow up to $2500 per academic year from banks or money lending institutions to help pay educational costs. The College analyzes the amount of the applicant's need for a subsidized loan and makes a recommendation to the lender. If family income is under $15,000 per year, the Federal Government pays the full interest on this loan while the student is attending school. If a borrower dies or becomes permanently disabled, the loan will be cancelled.

Other Loans

Loans can often be obtained from banks, savings and loan associations, credit unions, pension funds, insurance companies, and similar institutions. Loans are approved or denied at the discretion of the lender. The Ivy Tech Foundation is another source of loans to worthy students. Contact the Office of Student Services for assistance.

Hoosier Scholarships

These are awarded to eligible Indiana high school graduates on the basis of scholastic aptitude and academic achievement by the State Scholarship Commission of Indiana. Application is made prior to December of the senior year of high school to the SSCI.

Indiana Educational Grants

These grants are awarded to eligible Indiana high school graduates of exceptional financial need. Application is made to the State Scholarship Commission of Indiana prior to April 1 of the student's senior year in high school.

Local Scholarships and Grants

A variety of individual grants or scholarships are available to students of the College. In many cases these are highly individualized because of the source of funds or purpose of the award. The availability of such funds varies in each regional institute. Information may be secured from the Office of Student Services.

Child of Disabled Veteran Awards

Certain institutional fees are waived for students who are certified as children of veterans with a service connected disability or death. Contact the Office of Student Services for assistance.

Police and Fireman Orphans Awards

Certain institutional fees are waived for students who are certified as children of paid firemen or policemen who were killed in the line of duty. Contact the Office of Student Services for assistance.

Vocational Rehabilitation

Monthly cash benefits are available to students who have a disability that is considered a handicap to employment. The amount awarded is based upon individual needs and program requirements by the local Vocational Rehabilitation office. Contact the Office of Student Services for assistance.

Manpower Development and Training Act

For students enrolling under the sponsorship of the Manpower Development and Training Act (MDTA), final approval from the local office of the Indiana Employment Security Division must be received before final enrollment and class attendance may begin. Application should be made at least 30 days prior to the date the student plans to enroll. An official College application for admission must be submitted with the request for training.

Social Security

Monthly cash social security benefits may be available to a child when one of his or her parents begins receiving social security disability or retirement benefits, or when a parent dies after having worked in a job covered by social security long enough to be insured. Contact the Office of Student Services for assistance.

ACADEMIC POLICIES

Attendance

The instructor has no alternative other than to seek evidence of the same quality of work from those who are in regular attendance. Arrangements for absences due to minor illnesses (less than three full consecutive days) are handled by the instructor. The instructor may refer excessive absences to the Director of Instruction.

The College will maintain a record of all tardiness and absences. These records will include reasons for absences and tardiness excused by the Collge.

Unexcused absences in excess of five days per month will result in the student losing VA benefits. Only those absences due to sickness, death in the immediate family, or similar reasons will be considered excusable. Reentrance may be certified when conditions causing the excess absences have been reported.

College Credit

College credit is that credit described in quarter hours and awarded at the completion of a course. Degree-credit is used in determining the student's cumulative index for certificate and/or degree programs. Institutional credit is that credit which is used to indicate student progress in non-degree courses.

Quarter Hour

The quarter hour is defined as the credit level for a course. It is based on the number of contact hours per week required to achieve a specific academic level.

Matriculated Student

A student is considered to be a matriculated student when he has: (1) stated his intention to pursue a certificate or degree in a program; (2) met the admission requirements for that program or demonstrated a proficiency; (3) had an advisor assigned.

Normal Load

A normal student load is determined by dividing the credits required for graduation in the program by the number of quarters normally required for graduation. The normal credit load average is 14 to 17 credits per quarter.

Maximum Load

Twenty credits per quarter is considered a maximum load.

Quality Point

A "quality point" is a numerical value assigned to the grade a student receives in a degree-credit course in order to provide a quantitative determination of the student's scholarship. Used in computing cumulative index, quality points are calculated to three decimals and rounded out to two decimals.

Cumulative Index

The "cumulative index" is a measure of a student's scholastic success obtained by dividing the total number of quality points earned by the total number of degree credits attempted.

Final Examination

A final examination may be required for the completion of a course and for the receipt of a passing grade. Absences from scheduled final examinations, with the privilege of a make-up examination, must be arranged with the instructor.

Grading

It is the policy of the College to use grades to report student progress in and/or completion of a credit course. Student performance in courses is indicated by one of the following grades:

GRADE	QUALITY	QUALITY POINTS
A	Superior	4
B	Above Average	3
C	Passing	2
STATUS		
IP	In Progress	not computed
W	Withdrawal	not computed
S	Credit by Examination	not computed
AU	Audit	not computed

"Not computed" indicates that the grade is not used in computing the student's cumulative index.

Mid-Quarter Deficiencies

Informal reports of a mid-quarter deficiency will be issued by the regional institute to all students in degree credit courses doing unsatisfactory work.

Academic Honors

Full-time students enrolled in degree credit courses who have a quality point average of 3.50 or above are eligible to be named to the Dean's list.

Academic Probation

The student who has received "IP" two consecutive times for the same course must receive permission from the regional institute Student Status Committee before registering for further course work. The student who has not completed an "IP" for three consecutive quarters, will receive a "W." To complete and receive credit, re-registration for that course will have to occur.

Official Withdrawal

"Official Withdrawal" is that process in which the student notifies the Office of Student Services of his withdrawal from the College thereby making it an official withdrawal. Under certain acceptable conditions, students may be permitted officially to withdraw from the College. Acceptable reasons would be sickness, hardship, death in the family, or military service.

Students who withdraw any time after classes begin will receive a grade of W. If the student is required to officially withdraw from classes because of military service obligations, he is entitled to take an early final examination for the class or classes. A copy of the active military duty orders must be presented to qualify for early examination.

PLACEMENT

The College believes assistance in placement of graduates is an integral function of the College. In recognition of this concept a state-wide placement office has been established as a service of the College to its graduates. This service includes:

1. Coordination of regional institute activities for placement.
2. Implementation of a system for state-wide notification of known employment opportunities.
3. Correlation of graduate career intentions with industrial and business needs for employees.

Employment opportunities known to the College Placement Office are available to all students who have registered with the Office for assistance. Any student registered with the Placement Office will have the opportunity to be interviewed by any prospective employer. Employers registering with the Office will be provided the names of all qualified candidates for employment without regard to sex, race, age, or national origin.

HOUSING

Indiana Vocational Technical College does not have dormitories available for students. Out-of-town students needing accommodations should contact the regional institute's Office of Student Services for information regarding locally available housing.

STUDENT ORGANIZATIONS

It is the philosophy of the College that co-curricular activities complement the academic program of the institution. Students are encouraged to participate in all phases of the student activities program when such participation is consistent with sound educational practices.

All organizations must operate under the policies and guidelines as set for the institution by the Board of Trustees. No organizations will be permitted to function in College facilities without the approval of the administration and the student senate. All approved organizations must be open to all eligible candidates for membership. Each organization must make available to the student senate all records of officers, membership, and financial transactions of the group.

Student Senate

Students, with the desire to establish a system of participation in the student government and to increase the spirit and reputation of the College, have developed student senates.

Student senates are vested with authority to legislate on subjects concerning student affairs, unless regulation has been otherwise delegated, subject to the approval of the appropriate administrative office.

Constitutions of all student organizations must be

approved by a simple majority of a quorum. A quorum in this section shall be defined as a simple majority of the total membership and one faculty advisor.

Membership on the student senates normally is comprised of one representative from each class and the president of each recognized school club and organization. A representative must be a member of the class or organization from which the representative is chosen.

Committee on Student Status

A committee of three regional institute faculty members and the president of the student senate, who serves for one calendar year, will make recommendations relating to disciplinary or academic status of students.

Class Organizations

Each class, first year and second year, may organize by the election of class president, vice-president, secretary-treasurer, class reporter, and the at-large representatives for the student senate. Class organizations will be under the sponsorship of the student senate and their primary purpose is for class-wide social activities and sports functions. The election of class officers will occur during the first three weeks of a fall quarter. Each class will have a faculty advisor.

Clubs

Hobby, social, or interest clubs may be organized and must be chartered by the student senate. Clubs must have the following elected officers: president, vice-president, secretary-treasurer, club reporter, and a representative to the student senate. All clubs will have a faculty advisor. The student senate will determine if sufficient interest exists to form or to continue a club.

Intramural Sports

Sport activities of the College consist only of intramural sports sponsored by the student senate. Leagues may be formed where the interests of the students justify their organization.

Social Activities

All group activities of the College must be approved and sponsored by the student senate and the administration. Classes, clubs, and other groups are encouraged to plan and conduct social activities for their members. The student senate will organize and conduct school-wide social activities and gatherings. All students are encouraged to participate in these activities and many of them will be open for the students' guests.

Professional and Trade Societies

Student chapters of the various societies will be formed on the same basis and under the same requirements as other student organizations.

GENERAL INFORMATION

Financial Responsibility

Satisfactory financial arrangements with the College must be completed before a student may complete registration. If financial obligations are not satisfied by the end of the quarter, the College reserves the right to withhold grade reports. College transcripts will not be issued until all financial obligations are paid in full.

Bookstore

A bookstore is maintained to make available the books and supplies needed by students. The bookstore will be open throughout the academic year.

All books and regular supplies needed for training will be offered for sale at the bookstore. When special supplies are needed which are specifically related to laboratory requirements in a curriculum, they will be provided as part of the laboratory fee.

Lost and Found

A lost and found service is normally maintained in the bookstore, and all lost or found articles should be handled at that location.

College Colors

The College colors are blue and gold.

Office Hours

Except for Saturdays, Sundays, and holidays, the offices of the College are open from 8 A.M. to 5 P.M.

Personal Property

The College cannot be responsible for personal property. Students should mark or identify each item of personal property for their own protection.

Messages

The College office cannot accept or deliver personal messages or telephone calls for students except in case of extreme emergency.

FACULTY

A quality faculty serves at each regional institute. In faculty selection, considerable emphasis is placed on actual experience in the areas of technical specialization as well as in academic achievement. Primary con-

sideration is placed on the instructor's ability to convey knowledge. Faculty members are expected to maintain their professional status by keeping informed on current trends in their fields.

RECOGNITION

Indiana Vocational Technical College is a member of the Indiana Conference for Higher Education, the American Association of Community and Junior Colleges, the Indiana Association of College Admissions Counselors, and the Indiana Student Financial Aid Association.

The College is approved for the education of veterans and orphans of deceased veterans who are eligible for educational benefits. The College is endorsed by the Rehabilitation Division of the State of Indiana.

Courses of study and curricula for each occupational area of concentration are approved where applicable by appropriate certifying agencies, as well as by business, labor and industrial organizations.

Seven of Indiana Vocational Technical College's regional institutes have achieved Candidate for Accreditation status with the Commission on Colleges and Universities of the North Central Association of Colleges and Secondary Schools.

The College is continuing to work for full accreditation for all its regional institutes. Those institutes which have achieved Candidate for Accreditation status are located at South Bend, Fort Wayne, Kokomo, Terre Haute, Indianapolis, Columbus and Evansville.

Additional information may be obtained from the Office of Student Services at each regional institute.

COUNSELING SERVICE

Counseling services are available at each regional institute. These services include educational and vocational aptitude tests for students. Counselors will also help acquaint students with community and state agencies and other resources which may be useful to the students.

The College encourages close cooperation between student and teacher and grants each student the freedom to contact his teacher, department head, counselor, or director at any time.

GRADUATION REQUIREMENTS FOR DEGREE CREDIT PROGRAMS

It is the policy of the College to award the degree of Associate in Applied Sciences or the appropriate Certificate to those students who have met the graduation requirements listed below. Graduation ceremonies will be held at least once a year. Attendance at graduation is encouraged.

Requirements for Graduation

To graduate with an Associate Degree the student must:

1. Earn a minimum of 90 degree credits. The last 15 credits must be earned at the College.
2. Have satisfactorily completed all course work and received a terminal grade.
3. Complete an approved curriculum and (1) be a high school graduate, or (2) have successfully completed a high school equivalency examination.
4. Must have satisfied all financial obligations due the College.
5. The student must file a notice of "intent to graduate" with the regional institute Office of Student Services at the beginning of the quarter in which the student intends to graduate.
6. Associate Degree students are encouraged to attend graduation ceremonies.

To graduate with a Technical Certificate the student must:

1. Have earned a minimum of 45 degree credits.
2. Have satisfactorily completed all course work and received a terminal grade.
3. Complete an approved curriculum.
4. Have satisfied all financial obligations due the College.

To graduate with a Certificate of Proficiency the student must:

1. Have earned a minimum of 15 degree credits.
2. Have satisfactorily completed all course work and received a terminal grade.
3. Complete an approved curriculum.
4. Have satisfied all financial obligations due the College.

ADVISORY COMMITTEES

The curricula is developed with the assistance and advice of regional employers. Through advisory committees composed of representatives of the various employers, the College is kept informed of the needs of such employers, the training, job opportunities and the performance standards needed.

Advisory committees represent business, industry, labor, commerce, agriculture and government institutions.

These committees insure that programs presented by the College equip graduates with employable skills.

DISCIPLINARY DISMISSAL

An instructor, through the regional director, may, at any time, recommend that a student be withdrawn

from a course for disciplinary reasons. A student recommended for dismissal will be notified by his advisor and will be given an opportunity to discuss the matter with the Student Status Committee before final action is taken. Disciplinary dismissals from the College will be at the discretion of the regional director.

Any non-veteran student who is dismissed for disciplinary reasons shall not be entitled to a refund.

CONDUCT

College students are considered to be mature. Their conduct, both in school and out, is expected to be dignified and honorable. The responsibility for success rests largely with the individual student.

The College has few rules of conduct. On the contrary, it is expected that students will consider they are living in a democratic situation and that the reputation of their college rests with them. Common courtesy and cooperation at all times make conduct rules unnecessary.

The following resolution has been adopted by the College Board of Trustees:

"WHEREAS the mission of Indiana Vocational Technical College is to teach, conduct research and serve the public through the proper use of its facilities and personnel, and irresponsible acts of individuals may militate against the effective accomplishments of the College; and

"WHEREAS the unreasoning acts of a few, whether they be students, faculty members, or outsiders not connected with the College, likewise militate against the effective pursuit of education by a student; and

"WHEREAS the spirit of protest and independence that is normal in students has in the present time been evidenced by excessive opposition to established principles of law and order, by abuse of personal freedoms, by misuse of the basic rights of free speech and by the use of displays of force:

"The Board of Trustees of Indiana Vocational Technical College hereby resolves:

"That all basic rights of free speech and independent action of individual citizens will be preserved so long as any exercise of such rights does not infringe upon the freedoms and rights of others.

"That any grievance presented in a calm and reasonable manner will be given fair and thorough consideration by the respective administrations, including Regional Boards of Trustees, and just and impartial answer will be returned with the minimum delay.

"HOWEVER, any person, student, faculty member, or employee of the College who takes part in any activity which interferes with other persons' lawful use of the property of Indiana Vocational Technical College and regional institutes, or who performs in such manner as to have the effect of denying or interfering with the lawful use of such property by others, will be requested to leave the premises of the College or its Regional Institutions, and

"If any person, student, faculty member or employee of the College refuses to leave the premises of any property of the College, when so requested regardless of reason, by any duly constituted official of Indiana Vocational Technical College including its regional institutions, then proper law enforcement officials will be requested to arrest such persons as trespassers, and such persons will be subject to such disciplinary action by the College as the proper officials deem reasonable, including expulsion and/or termination of benefits and rights.

"If any person or property is in danger of harm from any activities such as described above, that law enforcement officials will be requested to arrest such offenders and remove them from the premises.

"This Resolution is hereby adopted and made a matter of corporate record, this 31st day of March, 1969."

THE CURRICULA

The College offers a wide variety of learning opportunities to all who seek instruction or training. These opportunities for learning are organized into two major program activities:

1. Degree Credit Programs: Offered by five major divisions: BUSINESS SCIENCES, GRAPHICS AND MEDIA, HEALTH OCCUPATIONS, TRADE AND TECHNICAL AND SPECIAL PROGRAMS, these programs provide the specialized skill development and training so necessary for employment, career advancement, and ultimate success in today's complex society.
2. Community Service Programs and Courses: These offerings while not leading to a degree or technical certificate, do carry institutional-credit and are designed to meet the specialized and periodic training needs of local business and industry. In addition, a broad range of skills advancement courses are available to meet the continuing education needs of the local community.

CURRICULA DEVELOPMENT

The outlines and descriptions of the curricula as indicated in this catalog are an accurate presentation of their status at the time of publication. However, variations may occur in both course content and program sequence, as a result of the constant effort to maintain occupational relevance in all programs.

THE CONTINUUM

In today's fast-paced technological society constant change has become the rule rather than the exception. New Methods, materials, and indeed, entire new career fields are constantly evolving and expanding.

As a result any training institution, which has as its primary goal occupational training and career development, cannot remain static in either its program offerings, or the content of its courses. For this reason, the College is continually revising and updating its curricula to meet the ever-changing needs of our state's employers and citizens.

The College's unique curriculum is designed around the continuum, or "career ladder concept." The student may begin training at his present level and continue to study his chosen career field until he reaches his personal employment objective. Although many of these continuums lead to the Associate Degree, the student may take advantage of the many career opportunities his training will have provided by taking employment when ready to do so.

The concept of the continuum is that of becoming a completely, "student-oriented" institution where it is necessary to assess the characteristics of all prospective full time students prior to their enrollment. Each full time applicant is encouraged to take a battery of tests prior to his enrollment. The information gathered will provide sufficient knowledge to enable counselors and advisors to assist each student in planning an appropriate program. The purpose of this testing program is for guidance, not selection for admission.

Students will be placed in courses appropriate to their capabilities and career objectives.

The College provides a wide range of programs in a continuum of education spanning from the Advancement Studies level through the Associate Degree level.

PART-TIME PROGRAMS

Most of the programs and courses of the College, both degree credit and institutional credit, are also offered on a part-time basis. Part-time programs have the same credit requirements as the regular full-time programs, and follow the College calendar for registration, holidays and vacations. However, contact hours per week and individual class schedules are specifically arranged by each regional institute to accommodate the special needs of employed students.

G.E.D. TESTING

The thirteen regional institutes of Indiana Vocation Technical College have been designated General Education Development (GED) testing centers by the Indiana Department of Public Instruction.

Students scoring sufficiently high on the test qualify for a high school diploma either from their old high school or from the Indiana Department of Public Instruction.

The College will offer the program only to students already enrolled in the College and as an aid to their achieving an occupational objective.

Applicants wanting to take the tests must be at least 19 years old at the time of application and must be residents of Indiana. Those who fail the tests may take them again after six months.

The curriculum material required is available as part of the Skills Advancement Studies in the Learning Resources Center.

Please contact your local regional institute for further details and testing schedules.

LEARNING RESOURCES

An extremely important factor in successful career training is the recognition of each student as an individual, with unique and individual training requirements. For this reason one of the most important college services is the Learning Resources Center in each regional institute.

Students work with books, tapes, slides, models and similar materials on an individual basis. They can repeat the work as often as necessary until they are sure they understand it, and when they need assistance, an instructor is nearby.

In the low-pressure learning laboratory environment, students enjoy study and usually progress faster than they would with other methods.

The learning laboratories are used primarily to teach such basic subjects as communications, speed reading, comprehension, writing and mathematics. Deficiencies in these areas often restrict students in their career subjects. The laboratories help students overcome their deficiencies as they progress in their other studies.

SKILLS ADVANCEMENT STUDIES

Skills Advancement Studies, as a part of the Learning Resources Center, is a service program to all curricula. The program offers both institutional-credit and degree-credit courses, and features individualized, self-paced instruction tailored to each student's individual needs. The emphasis of the subject material is on communication skills, mathematics skills, shop processes, and science with supplementary material oriented toward the occupation the student has established as his goal. All advancement studies courses are designed to that a student may begin at whatever level he is currently achieving and advance as rapidly as he chooses to whatever objective he sets for himself.

The amount and type of credit granted is based on the number of specific objectives the student has met. Institutional credit will be granted for those courses required to achieve the minimum entry requirements for a program. Degree-credit will be granted for those courses which are beyond the minimum entry requirements for a program.

COURSE DESCRIPTIONS	Hours	Credits

8101 Mathematical Concepts and Operations 1-8 1-5

At his own pace, the student will cover pre-algebraic math concepts in numbering systems, and operations in addition, subtraction, fractions and decimals.

8102 Fundamentals of Technical Mathematics 1-8 1-5

On a self-paced format the student will cover the concepts of percentage, ratio, proportion, measurement, powers and roots.

8103 Technical Mathematics I 1-8 1-5

Continuing from the previous material, algebraic concepts are introduced along with signed numbers and basic geometric and trigonometric relationships.

8104 Occupational Mathematics 1-8 1-5

On an individualized self-paced basis, math as used in the occupational area the student is enrolled, will be covered in detail.

COURSE DESCRIPTIONS	Hours	Credits

8105 Communication Skills Development 1-5 1-3

On an individualized self-paced basis, each student will cover writing, grammar and vocabulary development oriented toward his occupation.

8106 Reading Comprehension, Rate and Study Development 1-10 1-8

This segment should be taken concurrently with 8105. This course develops reading skills directed toward increased rates of reading speed plus greater degrees of comprehension and retention of information.

8107 Technical Communications I 1-5 1-3

On an individualized, self-paced program the student will cover writing, reading and speaking skills oriented toward occupational needs.

8108 Occupational Communications 1-5 1-3

Communications skills needed for specific occupations are covered with emphasis on the skill area most needed for that occupational skill.

8109 Science Development 1-5 1-3

On a self-paced format the student is introduced to concepts in physics, chemistry and biology that may be used as a foundation for the technical curriculum.

8110 Shop Processes 1-12 1-5

This self-paced course is designed to develop the knowledge, skill and resourcefulness of the student in the use of hand and power tools. Emphasis is placed on safety and proper care of tools and equipment. Extensive laboratory work involves the techniques of measurements and the proper choice of tools for the job.

8111 Problem Seminar 0

This is a non-credit elective, operated as an open arranged laboratory class in which the student pursues supervised study in his occupational field. Problems are assigned by his department chairman.

8112 Typewriting I 72 3

This course is designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

8113 Keypunch 72 4

Development of a high level of skill in programming and operating the IBM keypunch and verifier, including speed and accuracy in keypunching and verifying.

8114 Basic Techniques for Ward Clerks 240 6

This course is designed to prepare a non-professional worker with clerical and receptionist duties of the nursing unit under the supervision of the charge nurse on the unit.

8115 Arts & Practices for Nurse Aides & Orderlies 136 6

This course is designed to prepare nurses' aides and orderlies with the skills necessary to perform selected activities under direct supervision of the professional nurse.

Care of the patient unit, personal care of the patient, vital signs, admission procedures, nutrition and patient safety.	92 hours
Nursing in Specific Disease Conditions	18 hours
Employment Practices and Procedures	6 hours
Clinical Experience	10 hours

COURSE DESCRIPTIONS	Hours	Credits
8116 Food Preparation and Service for Diet Aides	240	6

This course provides basic instruction in safe food handling, health practices and sanitation. Care and use of equipment and safety requirements are stressed. The student receives classroom instruction and on-the-job practice in basic skills in management of work and in preparation and service of food in hospitals, nursing homes, homes for the aged and child care centers.

9010 Pharmacology for Licensed Practical Nurses	60	4

This course is designed to present principles of action of drugs, correct dosage, methods of administration, symptoms of overdose and abnormal reactions that may arise from individual differences in particular patients.

COURSE DESCRIPTIONS	Hours	Credits
9011 Mathematics of Pharmacology	24	2

This course is designed to present basic principles of computation for administration of drugs.

The Skills Advancement Program also offers individual courses of a specialized nature which may be used as electives in the other four college divisions. In addition, many of the degree-credit courses shown in this catalog are available as skills advancement studies for those students who wish to improve their present occupational proficiency without entering a formal program.

Please contact your local regional institute for course availability and class schedules.

BUSINESS SCIENCES DIVISION

Our increasingly complex society offers outstanding job opportunities for those who have acquired a sound, fundamental knowledge of the field of business. The introduction of sophisticated information-handling systems in modern offices has increased the demand for highly trained office personnel.

To meet this need, the College offers nine programs in the major business career fields. Many of these programs lead to the Associate in Applied Science Degree, and also provide a firm basis for further study at the professional level.

All students are encouraged to remain in their chosen program until they have achieved their goal. However, the College recognizes there are often many factors which may cause a student to interrupt his training, even temporarily, before reaching his ultimate goal. Therefore, the College's unique curriculum design allows graduation with a certificate at progressive levels of identified career proficiency throughout each program.

The primary objective of the programs in the Business Sciences Division is to prepare occupationally competent graduates in the various areas of business; including development of business leadership and decision-making ability as applies to one of the fastest growing areas of employment in our economy.

GRAPHICS AND MEDIA DIVISION

The Graphics and Media Division of the College contains those programs which combine technical knowledge of materials, ingredients, machines, and methods of production with creativity to improve appearances, design, usefulness and general acceptance of a product by the consumer. Generally, a high degree of creative ability, the art and science of communicating, and the ability to anticipate consumer needs are required for success. Natural talent, determination, and willingness to work hard are essential for success.

HEALTH OCCUPATIONS DIVISION

The delivery of health care services is the nation's fastest growing industry. With the advent of more sophisticated medical science, career opportunities in this field continue to grow. The concern for extending medical cures and preventative medical care to increasing numbers of people has also resulted in a significant need for technicians and aides to assist doctors, dentists and scientists in providing quality health care service.

To meet this need, Indiana Vocational Technical College offers a variety of programs in the health-related field. Health programs are designed to meet available national and state certification and licensure standards. Each program is developed with the aid of local and statewide advisory committees to ensure that a high degree of graduate acceptance is maintained.

Each health occupations program emphasizes instruction in principles and practices of the specific technical area, and in addition, includes general education integrated throughout the program. An important part of health occupations programs is the clinical experience each student gains in cooperating hospitals, nursing homes, laboratories and other health care institutions.

TRADE AND TECHNICAL DIVISION

The increased mechanization of American industry, coupled with the ever-changing state-of-the-art in the technical fields, has created a tremendous need for broadly trained skilled technicians who have additional technical preparation above the high school level.

To meet this need, the College offers a variety of programs in the major trade and technical career fields. Many of these programs lead to the Associate in Applied Science Degree, and also provide a firm basis for further study at the professional level.

All students are encouraged to remain in their chosen program until they have achieved their goal. However, the College recognizes there are often factors which may cause a student to interrupt his training, even temporarily, before reaching his ultimate goal. Therefore, Ivy Tech's unique curriculum design allows graduation with a certificate at progressive levels of identified career proficiency throughout each program.

All programs in the Trade and Technical Division emphasize laboratory and shop work as a primary means of skill development, thus reinforcing the often stated demand of employers that graduates must know the "How as well as the "Why" of their chosen career field.

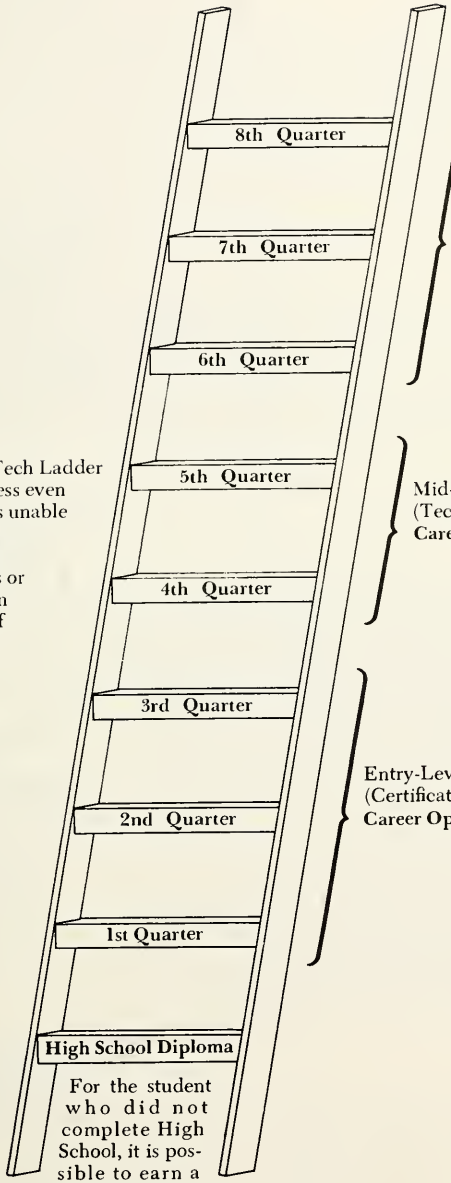
The general educational development of the student is given a high priority in each trade and technical program. In today's technological world, in which the only really constant parameter is change itself, the student must be prepared to adapt quickly to new ideas and procedures, and to communicate effectively with a broad range of people, both in and out of his specific occupational area.

Ivy Tech's curriculum design integrates general education studies in each technical course, thus stressing the working relationship between the highly skilled technician and the broader requirements of the world around him.

SPECIAL PROGRAMS DIVISION

In an effort to meet the total occupational training needs of Indiana citizens, the College offers several special programs for degree-credit which are required only periodically to fulfill a specific employment need, and often only on a regional basis. There are 8 such programs in this division. They are: Applied Fire Science, Carpenter Apprenticeship, Culinary Arts Careers, Culinary Services, Fire Protection, Ground Water Specialist and Social Service Technology, and Medical Records Technology.

IVY TECH CONTINUUM LADDER



Advanced Skills
(Associate Degree or
Technical Certificate)
Career Opportunities

Mid-Level Skills
(Technical Certificate)
Career Opportunities

Entry-Level Skills
(Certificate of Proficiency)
Career Opportunities

Any step on the Ivy Tech Ladder is a step toward success even for the student who is unable to complete an entire program. See specific program descriptions or the Program Location Chart for examples of career opportunities.

For the student who did not complete High School, it is possible to earn a high school diploma while attending I.V.T.C.

Indiana Vocational Technical College is an open enrollment institution

PROGRAM LOCATION CHART

DEGREE-CREDIT PROGRAM LOCATION CHART — 1974-1975

INTERPRETING THE PROGRAM LOCATION CHART

Bold face type indicates program offered and the total number of quarters required for the completion of that program.

Checks (✔) indicate specific regions in which the complete program is offered.

Light face type indicates career opportunities available after the indicated number of quarters. These are not the names of specific courses.

Dots (•) indicate those quarters offered in each region.

	Number of Quarters	Region 1—Northwest	Region 2—South Bend	Region 3—Fort Wayne	Region 4—Lafayette	Region 5—Kokomo	Region 6—Muncie	Region 7—Terre Haute	Region 8—Indianapolis	Region 9—Richmond	Region 10—Columbus	Region 10—Bloomington	Region 11—Madison	Region 12—Evansville	Region 13—Jeffersonville
BUSINESS SCIENCES DIVISION															
Accounting Technology	**6**	✔	✔	✔	✔	✔	✔	✔	✔		✔		✔		✔
Typical career opportunities from the above program are:															
General Office Clerk	1	•	•	•	•	•	•	•	•		•		•		•
General Ledger Bookkeeper	1	•	•	•	•	•	•	•	•		•		•		•
Payroll Clerk	1	•	•	•	•	•	•	•	•		•		•		•
Calculating Machine Operator	2	•	•	•	•	•	•	•	•		•		•		•
Bookkeeper	2	•	•	•	•	•	•	•	•		•		•		•
Payroll Accounting Clerk	2	•	•	•	•	•	•	•	•		•		•		•
Accounting Clerk	3	•	•	•	•	•	•	•	•		•		•		•
Accounts Payable Bookkeeper	3	•	•	•	•	•	•	•	•		•		•		•
Accounts Receivable Bookkeeper	3	•	•	•	•	•	•	•	•		•		•		•
Credit Clerk	3	•	•	•	•	•	•	•	•		•		•		•
Cost Accounting Clerk	4	•	•	•	•	•	•	•	•		•		•		•
Junior Cost Accountant	5	•	•	•	•	•	•	•	•		•		•		•
Junior Accountant	6	•	•	•	•	•	•	•	•		•		•		•
Junior Executive Trainee	6	•	•	•	•	•	•	•	•		•		•		•
Audit Clerk	6	•	•	•	•	•	•	•	•		•		•		•
Administrative Clerk	6	•	•	•	•	•	•	•	•		•		•		•
Business Management Technology	**6**			✔											✔
Typical career opportunities from the above program are:															
Calculating Machines Operator	1			•											•
Payroll Clerk	1			•											•
Bookkeeper	2			•											•
Junior Cost Accountant	4			•											•
Office Manager Trainee	4			•											•
Business Manager Trainee	5			•											•
Personnel Manager Trainee	6			•											•
Junior Executive Trainee	6			•											•

INTERPRETING THE PROGRAM LOCATION CHART

Bold face type indicates program offered and the total number of quarters required for the completion of that program.

Checks (✔) indicate specific regions in which the complete program is offered.

Light face type indicates career opportunities available after the indicated number of quarters. These are not the names of specific courses.

Dots (•) indicate those quarters offered in each region.

DEGREE-CREDIT PROGRAM LOCATION CHART — 1974-1975

	Number of Quarters	Region 1–Northwest	Region 2–South Bend	Region 3–Fort Wayne	Region 4–Lafayette	Region 5–Kokomo	Region 6–Muncie	Region 7–Terre Haute	Region 8–Indianapolis	Region 9–Richmond	Region 10–Columbus	Region 10–Bloomington	Region 11–Madison	Region 12–Evansville	Region 13–Jeffersonville
Computer Programming	**6**	✔	✔	✔		✔		✔	✔						
Typical career opportunities from the above program are:															
Data Processing Control Clerk	1	•	•	•		•		•	•						
Digital Computer Oper. Trainee	2	•	•	•		•		•	•						
Cobol Programmer Trainee	3	•	•	•		•		•	•						
Programmer Trainee	4	•	•	•		•		•	•						
Junior Programmer	5	•	•	•		•		•	•						
Business Applications Prog.	6	•	•	•		•		•	•						
Hotel-Motel Management Technology	**6**								✔						
Typical career opportunities from the above program are:															
Hotel Cashier	1								•						
Hotel-Motel Clerk	2								•						
Hotel-Motel Audit Clerk	3								•						
Hotel-Motel Bookkeeper	3								•						
Food and Beverage Supv. Trainee	4								•						
Hotel-Motel Sales Represent.	5								•						
Hotel-Motel Mgmt. Trainee	6								•						
Industrial Management Technology	**6**		✔	✔	✔		✔		✔					✔	✔
Typical career opportunities from the above program are:															
Plant Protection Trainee	2		•	•	•		•		•					•	•
Supervisor Trainee	2		•	•	•		•		•					•	•
Technical Report Writer	3		•	•	•		•		•					•	•
Time Study Analyst	3		•	•	•		•		•					•	•
Industrial Safety Technician	3		•	•	•		•		•					•	•
Materials Clerk	4		•	•	•		•		•					•	•
Purchasing Clerk	4		•	•	•		•		•					•	•
Quality Control Technician	4		•	•	•		•		•					•	•
Supply Clerk	4		•	•	•		•		•					•	•
Line Foreman Trainee	5		•	•	•		•		•					•	•
Prod. Control Mgmt. Trainee	5		•	•	•		•		•					•	•
Dept. Manager Trainee	6		•	•	•		•		•					•	•
Industrial Engineering Tech.	6		•	•	•		•		•					•	•
Industrial Training Assistant	6		•	•	•		•		•					•	•

INTERPRETING THE PROGRAM LOCATION CHART

Bold face type indicates program offered and the total number of quarters required for the completion of that program.

Checks (✔) indicate specific regions in which the complete program is offered.

Light face type indicates career opportunities available after the indicated number of quarters. These are not the names of specific courses.

Dots (•) indicate those quarters offered in each region.

DEGREE-CREDIT PROGRAM LOCATION CHART — 1974-1975

	Number of Quarters	Region 1—Northwest	Region 2—South Bend	Region 3—Fort Wayne	Region 4—Lafayette	Region 5—Kokomo	Region 6—Muncie	Region 7—Terre Haute	Region 8—Indianapolis	Region 9—Richmond	Region 10—Columbus	Region 10—Bloomington	Region 11—Madison	Region 12—Evansville	Region 13—Jeffersonville
Marketing Technology	**6**	✔	✔	✔					✔						
Typical career opportunities from the above program are:															
Stock Record Clerk	2	•	•	•					•						
Retail Store Bookkeeper	3	•	•	•					•						
Salesman	3	•	•	•					•						
Sales Management Trainee	4	•	•	•					•						
Fashion Buyer Trainee	5	•	•	•					•						
Marketing Mgmt. Trainee	6	•	•	•					•						
Store Management Trainee	6	•	•	•					•						
Secretarial—Administrative	**6**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔
Typical career opportunities from the above program are:															
General Office Clerk	1	•	•	•	•	•	•	•	•	•	•		•	•	•
Receptionist	1	•	•	•	•	•	•	•	•	•	•		•	•	•
Bookkeeper	2	•	•	•	•	•	•	•	•	•	•		•	•	•
Clerk Typist	2	•	•	•	•	•	•	•	•	•	•		•	•	•
File Clerk	2	•	•	•	•	•	•	•	•	•	•		•	•	•
Accounting Clerk	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Calculating Machine Operator	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Keypunch Operator	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Stenographer	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Typist	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Production Typist	4	•	•	•	•	•	•	•	•	•	•		•	•	•
General Secretary	4	•	•	•	•	•	•	•	•	•	•		•	•	•
Office Manager Trainee	5	•	•	•	•	•	•	•	•	•	•		•	•	•
Advanced Stenographer	5	•	•	•	•	•	•	•	•	•	•		•	•	•
Office Manager	6	•	•	•	•	•	•	•	•	•	•		•	•	•
Administrative Secretary	6	•	•	•	•	•	•	•	•	•	•		•	•	•
Secretarial—Legal	**4**				✔	✔	✔	✔	✔						✔
Typical career opportunities from the above program are:															
Legal Office Clerk	1				•	•	•	•	•						•
Legal Office Receptionist	1				•	•	•	•	•						•
Legal Office Typist	2				•	•	•	•	•						•
Legal Office Stenographer	2				•	•	•	•	•						•
Legal Secretary	3				•	•	•	•	•						•
Legal Stenographer	3				•	•	•	•	•						•

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Secretarial—Medical	**3**				✔	✔	✔								✔
Typical career opportunities from the above program are:															
Medical Office Clerk	1				•	•	•								•
Medical Office Receptionist	1				•	•	•								•
Medical Insurance Clerk	2				•	•	•								•
Medical Office Typist	2				•	•	•								•
Medical Secretary	3				•	•	•								•
Clinical Office Supervisor	3				•	•	•								•
GRAPHICS MEDIA DIVISION															
Commercial Art Technology	**8**		✔								✔			✔	✔
Typical career opportunities from the above program are:															
Topography Designer	3		•								•			•	•
Color Coordinator	4		•								•			•	•
Photo Retoucher	4		•								•			•	•
Industrial Illustrator	5		•								•			•	•
Airbrush Artist	5		•								•			•	•
Keyline Paste-up Artist	6		•								•			•	•
Ad Layout Artist	6		•								•			•	•
General Illustrator	7		•								•			•	•
Layout Designer	7		•								•			•	•
Keyline Artist	7		•								•			•	•
Technical Illustrator	7		•								•			•	•
Commercial Art Technician	8		•								•			•	•
Commercial and Indust. Photo.	**7**		✔												
Typical career opportunities from the above program are:															
Assistant Cameraman	3		•												
Assistant Darkroom Technician	3		•												
Studio Lighting Assistant	4		•												
Projection Printer	4		•												
Industrial Cameraman	5		•												
Commercial Cameraman	5		•												
Darkroom Technician	6		•												
Commercial Photographer	6		•												
Industrial Photographer	6		•												
Comm. Photographic Technician	7		•												
Indust. Photographic Technician	7		•												

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Interior Design Technology	**6**		✔											✔	
Typical career opportunities from the above program are:															
Interior Decorator's Assistant	2		•											•	
Textile Design Assistant	3		•											•	
Window Dresser	4		•											•	
Interior Decorator	4		•											•	
Showroom Designer	5		•											•	
Interior Salesman	5		•											•	
Display Designer	6		•											•	
Interior Designer	6		•											•	
Printing Technology	**6**							✔							
Typical career opportunities from the above program are:															
Process Camera Operator	2							•							
Stripper Trainee	2							•							
Transfer Operator	2							•							
Stripper	3							•							
Platemaker	3							•							
Composer	3							•							
Platen Pressman	4							•							
Photo Engraver	4							•							
Offset Reproduction Operator	4							•							
Plate Finisher	5							•							
Web-Pressman Trainee	5							•							
Embosser	5							•							
Lithographer	6							•							
Printing Supervisor	6							•							
Printing Technician	6							•							
Library Resource Aide	**3**				✔				✔						
Typical career opportunities from the above program are:															
Library Clerk	1				•				•						
A-V Library Assistant	2				•				•						
Learning Resources Center Aide	3				•				•						
Library Aide	3				•				•						

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HEALTH OCCUPATIONS DIVISION															
Child Care Technology	**6**	✔					✔								
Typical career opportunities from the above program are:															
Child Care Specialist I	3	•					•								
Child Care Specialist II	6	•					•								
Clinical Laboratory Technology	**7**		✔		✔				✔	✔					
Typical career opportunities from the above program are:															
Laboratory Aide	1		•		•			•	•	•					
Medical Laboratory Assistant	4		•		•			•	•	•					
Medical Laboratory Technician	7		•		•				•	•					
Dental Assistant	**3**				✔				✔						
Typical career opportunities from the above program are:															
Dental Assistant	3				•				•						
Emergency Care Technician	**4**	✔			✔				✔						
Typical career opportunities from the above program are:															
Emergency Med. Tech.-Ambul.	1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Emergency Med. Tech.-Ambul. (Adv.)	2	•			•				•						
Emergency Care Technician	4	•			•				•						
Medical Assistant	**6**	✔	✔		✔	✔	✔	✔	✔						✔
Typical career opportunities from the above program are:															
Medical Assistant Cert. (Gr. 1)	3	•	•		•	•	•	•	•				•		•
Medical Assistant (Gr. 2)	6	•	•		•	•	•	•	•						•
Obstetrical Technician	**4**								✔						
Typical career opportunities from the above program are:															
Obstetrical Technician	4								•						

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Operating Room Technician	**4**	✓	✓		✓	✓			✓						
Typical career opportunities from the above program are:															
Operating Room Technician	4	•	•		•	•			•						
Practical Nursing	**4**	✓	✓		✓			✓		✓	✓	✓			
Typical career opportunities from the above program are:															
Practical Nursing	4	•	•		•			•		•	•	•			
Radiologic Technology	**8**								✓						
Typical career opportunities from the above program are:															
Radiologic Technology	8								•						
Respiratory Therapy Technician	**4**	✓			✓				✓						
Typical career opportunities from the above program are:															
Respiratory Therapy Technician	4	•			•				•						
TRADE AND TECHNICAL DIVISION															
Agricultural Equipment Technology	**6**								✓						
Typical career opportunities from the above program are:															
Farm Shop Welder	1						•		•						
Small Engine Mechanic	1						•		•						
Farm Equipment Shop Helper	1						•		•						
Farm Equipment Shop Mechanic	2						•		•						
Tractor Hydraulics Mechanic	2						•		•						
Farm Equipment Field Mechanic	3						•		•						
Suburban Garden Equip. Mech.	3						•		•						
Tractor Mechanic	4								•						
Spraying Equipment Technician	4								•						
Air Conditioning Mechanic	5								•						
Field Maintenance Technician	5								•						
Tractor Service Representative	5								•						
Basic Diesel Mechanic	5								•						
Pollution Control Equip. Tech.	5								•						
Agricultural Equip. Technician	6								•						
Diesel Engine Technician	6								•						
Farm Equipment Salesman	6								•						
Parts Counterman	6								•						

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Architectural Design Technology	**7**		✔	✔	✔	✔		✔	✔						
Typical career opportunities from the above program are:															
Basic Draftsman	2		•	•	•	•		•	•						
Mobile Home Draftsman	3		•	•	•	•		•	•						
Residential Draftsman	3		•	•	•	•		•	•						
Commercial Draftsman Ass't.	4		•	•	•	•		•	•						
Specification Checker	4		•	•	•	•		•	•						
Architectural Detailer	4		•	•	•	•		•	•						
Institutional Draftsman	5		•	•	•	•		•	•						
Architectural Estimator	5		•	•	•	•		•	•						
Structural Design Draftsman	5		•	•	•	•		•	•						
Basic Arch. Design Technician	6		•	•	•	•		•	•						
Specification Writer	6		•	•	•	•		•	•						
Construction Expeditor	6		•	•	•	•		•	•						
Architectural Design Technician	7		•	•	•	•		•	•						
Landscape Draftsman	7		•	•	•	•		•	•						
Contractor's Field Represent.	7		•	•	•	•		•	•						
Surveying Technician	7		•	•	•	•		•	•						
Automotive Body Repair Technology	**4**	✔	✔	✔		✔		✔	✔						✔
Typical career opportunities from the above program are:															
Preparation Man	1	•	•	•		•		•	•						•
Masker	1	•	•	•		•		•	•						•
Auto-Body Helper	1	•	•	•		•		•	•						•
Basic Welder	2	•	•	•		•		•	•						•
Salvage Worker	2	•	•	•		•		•	•						•
Front-End Repair Mechanic	2	•	•	•		•		•	•						•
Frame and Chassis Mechanic	3	•	•	•		•		•	•						•
Paint Touchup Man	3	•	•	•		•		•	•						•
Paint Shop Assistant	3	•	•	•		•		•	•						•
Auto-Body Repair Technician	4	•	•	•		•		•	•						•
Body Shop Estimator	4	•	•	•		•		•	•						•
Insurance Estimator	4	•	•	•		•		•	•						•
Top and Interior Technician	4	•	•	•		•		•	•						•

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Automotive Service Technology	**7**	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓
Typical career opportunities from the above program are:															
Exhaust System Installer	1	•	•	•	•	•	•	•	•	•	•		•	•	•
Alignment Mechanic	I	•	•	•	•	•	•	•	•	•	•		•	•	•
Brake System Mechanic	1	•	•	•	•	•	•	•	•	•	•		•	•	•
Auto Ignition System Mechanic	2	•	•	•	•	•	•	•	•	•	•		•	•	•
Service Station Assistant	2	•	•	•	•	•	•	•	•	•	•		•	•	•
Basic Engine Mechanic	2	•	•	•	•	•	•	•	•	•	•		•	•	•
Carburetor Mechanic	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Safety Inspection Technician	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Lubrication Technician	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Wheel and Bearing Mechanic	3	•	•	•	•	•	•	•	•	•	•		•	•	•
Auto Air Conditioning Mech.	4	•	•	•	•	•	•	•	•	•	•		•	•	•
Auto Parts Counterman	4	•	•	•	•	•	•	•	•	•	•		•	•	•
Transmission Mechanic	5	•	•	•	•	•	•	•	•					•	•
Auto Accessories Salesman	5	•	•	•	•	•	•	•	•					•	•
Auto Accessories Mechanic	5	•	•	•	•	•	•	•	•					•	•
Auto Accessories Installer	5	•	•	•	•	•	•	•	•					•	•
Emission Control Technician	6	•	•	•	•	•	•	•	•					•	•
Electrical Systems Technician	6	•	•	•	•	•	•	•	•					•	•
Parts Manufacturer's Represent.	6	•	•	•	•	•	•	•	•					•	•
Automotive Service Technician	7	•	•	•	•	•	•	•	•					•	•
Service Station Operator	7	•	•	•	•	•	•	•	•					•	•
Parts Department Operator	7	•	•	•	•	•	•	•	•					•	•
Auto Service Estimator	7	•	•	•	•	•	•	•	•					•	•
Tune-up Technician	7	•	•	•	•	•	•	•	•					•	•

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Building Construction Technology	**6**					✔	✔		✔						✔
Typical career opportunities from the above program are:															
Construction Helper	1					•	•		•						•
Plumber Helper	1					•	•		•						•
Rough-in Trainee	2					•	•		•						•
Roofing Assistant	2					•	•		•						•
Insulation Installer	2					•	•		•						•
Electrician Helper	2					•	•		•						•
Interior Trim Assistant	3					•	•		•						•
Mill Worker	3					•	•		•						•
Form Builder	3					•	•		•						•
Maintenance Trainee	4					•	•		•						•
Site Surveyor	4					•	•		•						•
Sheet Metal Assistant	4					•	•		•						•
Plumber Trainee	5					•	•		•						•
Maintenance Plumber	5					•	•		•						•
Form Welder Trainee	5					•	•		•						•
Building Construction Tech.	6					•	•		•						•
Assistant Foreman	6					•	•		•						•
Manufacturers' Representative	6					•	•		•						•
General Maintenance Technician	6					•	•		•						•
Site Foreman	6					•	•		•						•
Diesel Power Technology	**5**	✔							✔						
Typical career opportunities from the above program are:															
Basic Welder	1	•							•						•
Flame Cutter	1	•							•						•
Diesel Ignition Mechanic	2	•							•						•
Basic Diesel Engine Mechanic	2	•							•						•
Diesel Engine Tester	2	•							•						•
Diesel Pump Mechanic	3	•							•						•
Fuel Injection Mechanic	3	•							•						•
Diesel Tune-up Mechanic	4	•							•						•
Diesel Power Mechanic	4	•							•						
Marine Diesel Mechanic	4	•							•						
Emission Control Technician	5	•							•						
Bus Diesel Mechanic	5	•							•						
Truck Diesel Mechanic	5	•							•						

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Electronics Communications Tech.	**7**		✔	✔		✔		✔	✔		✔		✔	✔	✔
Typical career opportunities from the above program are:															
Basic Electronics Assembler	1		•	•		•		•	•		•		•	•	•
Basic Radio Repairman	2		•	•		•		•	•		•		•	•	•
Antenna Installation Helper	2		•	•		•		•	•		•		•	•	•
Component Tester	2		•	•		•		•	•		•		•	•	•
Radio-TV Trouble Shooter Trainee	3		•	•		•		•	•		•		•	•	•
Production Repairman	3		•	•		•		•	•		•		•	•	•
Radio Service Tech. Trainee	3		•	•		•		•	•		•		•	•	•
Sound Equipment Technician	4		•	•		•		•	•		•		•	•	•
Radio-TV Tech. (State Lic. Level)	4		•	•		•		•	•		•		•	•	•
Test Equipment Maintenance Tech.	4		•	•		•		•	•		•		•	•	•
Commercial Technician (2nd Class FCC Level)	5		•	•		•		•	•		•		•	•	•
Two-Way Radio Technician	5		•	•		•		•	•		•		•	•	•
Component Sales Representative	5		•	•		•		•	•		•		•	•	•
Adv. Commercial Tech. (1st Class FCC Level)	6		•	•		•		•	•		•		•	•	•
Microwave Equipment Technician	6		•	•		•		•	•		•		•	•	•
Technical Writer	6		•	•		•		•	•		•		•	•	•
Quality Control Technician	7		•	•		•		•	•		•		•	•	•
Comm. Engineering Technician	7		•	•		•		•	•		•		•	•	•
Manufacturers' Representative	7		•	•		•		•	•		•		•	•	•

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Electronics Technology	**7**					✔	✔	✔	✔	✔	✔			✔	
Typical career opportunities from the above program are:															
Basic Electrical Assembler	1					•	•	•	•	•	•			•	
Basic Electrician Trainee	2						•	•	•	•	•			•	
Electrical Equip. Installer	2					•	•	•	•	•	•			•	
Component Tester	2					•	•	•	•	•	•			•	
Commercial Electrician Trainee	3						•	•	•	•	•			•	
Electric Motor Technician	3					•	•	•	•	•	•			•	
Instrumentation Mechanic	3					•	•	•	•	•	•			•	
Electrical Appliance Mechanic	3						•	•	•	•	•			•	
Industrial Elect. Equip. Inst.	4						•	•	•	•	•			•	
Basic Industrial Elect. Tech.	4					•	•	•	•	•	•			•	
Basic Digital Equipment Tech.	5					•	•	•	•	•	•			•	
Technical Writer	5					•	•	•	•	•	•			•	
Test Equip. Maintenance Tech.	5					•	•	•	•	•	•			•	
Servomechanisms Techincian	6					•	•	•	•	•	•			•	
Industrial Lab. Technician	6					•	•	•	•	•	•			•	
Digital Equip. Technician	6					•	•	•	•	•	•			•	
Process Control Equip. Tech.	6					•	•	•	•	•	•			•	
Quality Control Technician	7					•	•	•	•	•	•			•	
Manufacturers' Representative	7					•	•	•	•	•	•			•	
Industrial Elect. Technician	7					•	•	•	•	•	•			•	
Computer Equipment Technician	7					•	•	•	•	•	•			•	

INTERPRETING THE PROGRAM LOCATION CHART

Bold face type indicates program offered and the total number of quarters required for the completion of that program.

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Light face type indicates career opportunities available after the indicated number of quarters. These are not the names of specific courses.

Dots (•) indicate those quarters offered in each region.

DEGREE-CREDIT PROGRAM LOCATION CHART — 1974-1975

	Number of Quarters	Region 1—Northwest	Region 2—South Bend	Region 3—Fort Wayne	Region 4—Lafayette	Region 5—Kokomo	Region 6—Muncie	Region 7—Terre Haute	Region 8—Indianapolis	Region 9—Richmond	Region 10—Columbus	Region 10—Bloomington	Region 11—Madison	Region 12—Evansville	Region 13—Jeffersonville
Heating, Air Conditioning and Refrigeration Technology	**7**	✔			✔	✔	✔		✔				✔	✔	✔
Typical career opportunities from the above program are:															
Equipment Installation Helper	1	•			•	•	•		•				•	•	•
Production Line Tester	1	•			•	•	•		•				•	•	•
Furnace Installation Mech.	2	•			•	•	•		•				•	•	•
Burner Service Technician	2	•			•	•	•		•				•	•	•
Heating System Technician	3	•			•	•	•		•				•	•	•
Ventilating System Mechanic	3	•			•	•	•		•				•	•	•
Furnace Controls Technician	3	•			•	•	•		•				•	•	•
Domestic Refrigeration Mech.	4	•			•	•	•		•				•	•	•
Refrigeration Appliance Inst.	4	•			•	•	•		•				•	•	•
Air Cond. Equip. Technician	5	•			•	•	•		•				•	•	•
Manufacturers' Representative	5	•			•	•	•		•				•	•	•
Refrigeration Equip. Assembler	5	•			•	•	•		•				•	•	•
Comm. Air Cond. Mechanic	6	•			•	•	•		•				•	•	•
Systems Layout Technician	6	•			•	•	•		•				•	•	•
Systems Specifications Writer	6	•			•	•	•		•				•	•	•
Comm. Refrigeration Technician	7	•			•	•	•		•				•	•	•
Environmental Control Technician	7	•			•	•	•		•				•	•	•
Equip. Sales Representative	7	•			•	•	•		•				•	•	•
Industrial Maintenance Technology	**7**						✔								
Typical career opportunities from the above program are:															
Basic Maintenance Electrician	2						•								
Electrical Equip. Installer	2						•								
Basic Electrical Troubleshooter	2						•								
Gen'l Maintenance Electrician	3						•								
Basic Machine Tool Troubleshoot.	3						•								
Machine Maintenance Man	4						•								
Mechanical Troubleshooter	4						•								
Machine Tool Installer	4						•								
Burner Service Mechanic	5						•								
Equipment Installation Ass't	5						•								
Heating Plant Maintenance Ass't	6						•								
Basic Refrig. Equip. Troubles	6						•								
Industrial Maintenance Tech.	7						•								
Air Cond. Systems Mechanic	7						•								
Heating-Cooling Equip. Inst.	7						•								

DEGREE-CREDIT PROGRAM LOCATION CHART — 1974-1975

INTERPRETING THE PROGRAM LOCATION CHART

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Light face type indicates career opportunities available after the indicated number of quarters. These are not the names of specific courses.

Dots (•) indicate those quarters offered in each region.

	Number of Quarters	Region 1–Northwest	Region 2–South Bend	Region 3–Fort Wayne	Region 4–Lafayette	Region 5–Kokomo	Region 6–Muncie	Region 7–Terre Haute	Region 8–Indianapolis	Region 9–Richmond	Region 10–Columbus	Region 10–Bloomington	Region 11–Madison	Region 12–Evansville	Region 13–Jeffersonville
Manufacturing Design Technology	**7**	✔	✔	✔	✔	✔			✔	✔	✔		✔	✔	✔
Typical career opportunities from the above program are:															
Basic Mechanical Draftsman	2	•	•	•	•	•			•	•	•		•	•	•
Detail Draftsman	2	•	•	•	•	•			•	•	•		•	•	•
Letterer	3	•	•	•	•	•			•	•	•		•	•	•
Detailer	3	•	•	•	•	•			•	•	•		•	•	•
Jig and Fixture Design Ass't	4	•	•	•	•	•			•	•	•		•	•	•
Mechanical Layout Draftsman	4	•	•	•	•	•			•	•	•		•	•	•
Tool Design Assistant	5	•	•	•	•	•			•	•	•		•	•	•
Tool Drawing Checker	5	•	•	•	•	•			•	•	•		•	•	•
Die Design Assistant	6	•	•	•	•	•			•	•	•		•	•	•
Sheet Metal Draftsman	6	•	•	•	•	•			•	•	•		•	•	•
Basic Tool and Die Draftsman	6	•	•	•	•	•			•	•	•		•	•	•
Basic Design Draftsman	7	•	•	•	•	•			•	•	•		•	•	•
Manufacturing Design Technician	7	•	•	•	•	•			•	•	•		•	•	•
Engineering Inspector	7	•	•	•	•	•			•	•	•		•	•	•
Specification Checker	7	•	•	•	•	•			•	•	•		•	•	•
Tool Engineering Technology	**7**		✔						✔	✔					
Typical career opportunities from the above program are:															
Tool Clerk	1		•						•	•					
Beginning Lathe Operator	2		•						•	•					
Beginning Milling Operator	2		•						•	•					
Beginning Drill Press Operator	2		•						•	•					
Beginning Shaper Operator	2		•						•	•					
Basic Surface Grinder	3		•						•	•					
Production Lathe Operator	3		•						•	•					
Basic Machinist	4		•						•	•					
Maintenance Machinist	4		•						•	•					
Quality Control Assistant	5		•						•	•					
Machine Design Assistant	5		•						•	•					
Tool Room Operator	5		•						•	•					
Materials Tester	5		•						•	•					
Tape Control Technician	6		•						•	•					
Tool Programming Assistant	6		•						•	•					
Machine Tool Troubleshooter	6		•						•	•					
Tool Engineering Technician	7		•						•	•					
Mechanical Engineering Tech.	7		•						•	•					
Tool Manufacturers' Represent.	7		•						•	•					

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Light face type indicates career opportunities available after the indicated number of quarters. These are not the names of specific courses.

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DEGREE-CREDIT PROGRAM LOCATION CHART — 1974-1975

	Number of Quarters	Region 1—Northwest	Region 2—South Bend	Region 3—Fort Wayne	Region 4—Lafayette	Region 5—Kokomo	Region 6—Muncie	Region 7—Terre Haute	Region 8—Indianapolis	Region 9—Richmond	Region 10—Columbus	Region 10—Bloomington	Region 11—Madison	Region 12—Evansville	Region 13—Jeffersonville
Water and Wastewater Technology	**5**	✔													
Typical career opportunities from the above program are:															
Water Pollution Measure. Ass't	2	•													
Laboratory Aide	2	•													
Water Treatment Plant Worker	2	•													
Wastewater Treatment Plant Wkr.	2	•													
Laboratory Assistant	3	•													
Wastewater Treatment Plant Ass't	3	•													
Muni. Water Treatment Plant Tech.	4	•													
Muni. Wastewater Treatment Plant Technician	4	•													
Instrumentation Assistant	4	•													
Water Pollution Meas. Technician	4	•													
Indust. Water Treatment Tech.	5	•													
Indust. Wastewater Treat. Tech.	5	•													
Water and Wastewater Cont. Insp.	5	•													
Water and Wastewater Engineering Aide	5	•													
Regulatory Field Inspector	5	•													
Muni. Water Treatment Pl. Oper.	5	•													
Muni. Wastewater Treatment Plant Operator	5	•													
Welding Technology	**5**	✔	✔	✔	✔			✔	✔					✔	✔
Typical career opportunities from the above program are:															
Flame Cutter	1	•	•	•	•			•	•					•	•
Beginning Brazer	1	•	•	•	•			•	•					•	•
Beginning Gas Welder	1	•	•	•	•			•	•					•	•
Arc Cutter	2	•	•	•	•			•	•					•	•
Basic Arc Welder	2	•	•	•	•			•	•					•	•
Setup Man	2	•	•	•	•			•	•					•	•
Inert Gas Welder	3	•	•	•	•			•	•					•	•
Repair Welder	3	•	•	•	•			•	•					•	•
General Arc Welder	3	•	•	•	•			•	•					•	•
Basic Spot Welder	4	•	•	•	•			•	•					•	•
Welding Equip. Repairman	4	•	•	•	•			•	•					•	•
Welding Equip. Salesman	4	•	•	•	•			•	•					•	•
Beginning Production Welder	4	•	•	•	•			•	•					•	•
Basic Resist-Welder Operator	4	•	•	•	•			•	•					•	•
Welding Technician	5	•	•	•	•			•	•					•	•
Welding Inspector	5	•	•	•	•			•	•					•	•
Estimator	5	•	•	•	•			•	•					•	•
Manufacturers' Representative	5	•	•	•	•			•	•					•	•

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DEGREE-CREDIT PROGRAM LOCATION CHART — 1974-1975

	Number of Quarters	Region 1—Northwest	Region 2—South Bend	Region 3—Fort Wayne	Region 4—Lafayette	Region 5—Kokomo	Region 6—Muncie	Region 7—Terre Haute	Region 8—Indianapolis	Region 9—Richmond	Region 10—Columbus	Region 10—Bloomington	Region 11—Madison	Region 12—Evansville	Region 13—Jeffersonville
SPECIAL PROGRAMS		✓	✓						✓						
Applied Fire Science Technology	6	•	•												
Carpenter's Apprentice*	12								•						
Culinary Arts Careers	6		•												
Culinary Services	3		•												
Fire Protection	3	•	•												
Ground Water Specialist	3														
Medical Records Technology	4														
Typical career opportunities from the above program are:															
Medical Records Clerk	1														
Admitting Clerk	1														
Medical Records Technician	4														
Social Service Technology	6														

*Related Courses only

ACCOUNTING TECHNOLOGY

The expanding American economy, increasing size of the business community, growing complexities of taxation and the enlargement of governmental operations have combined to create a continuous demand for both public and private accountants.

Accounting is the language of business and is an important part of the central function of management. It uses measurement and communications of data regarding obtaining, disposing, and using material and human resources and the efficiency of their use. Accounting can and must measure and communicate data, not only in terms of symbols, but also in nonmonetary units, such as material, labor and time. Accounting is a means of expressing in clear, understandable financial terms the results of complex operations of business, government and other institutions.

The Accounting Technology curriculum leads to the degree of Associate of Applied Science. The program prepares graduates for employment in the public or private accounting field in such positions as junior accountant, audit clerk, and many other related jobs.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

ACCOUNTING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
0110	Accounting I	72	4
0111	Mathematics of Finance	60	5
0112	Technical Communications	48	3
0113	Typewriting I	72	3
		252	15

Career Opportunities: General Office Clerk, General Ledger Bookkeeper, Payroll Clerk.

SECOND QUARTER			
0120	Accounting II	72	4
0121	Business Communications	48	3
0122	Business Law I	36	3
0123	Office Calculating Machines	60	3
0124	Consumer Economics	36	3
		252	16

Career Opportunities: Calculating Machines Operator, Bookkeeper, Payroll Accounting Clerk.

THIRD QUARTER			
0130	Accounting III	72	4
0131	Oral Communications	36	3
0132	Introduction to Data Processing and Programming	96	5
0133	Business Principles and Organization	36	3
	or		
0134	Field Project and/or Case Study°	90	4
		240-294	16

Career Opportunities: Accounting Clerk, Credit Clerk, Accounts Payable Bookkeeper, Accounts Receivable Bookkeeper.

FOURTH QUARTER			
0140	Accounting IV	72	4
0141	Income Tax I	72	4
0142	Cost Accounting I	72	4
0143	Business Law II	36	3
		252	15

Career Opportunities: Cost Accounting Clerk

FIFTH QUARTER			
0150	Accounting V	72	4
0151	Cost Accounting II	72	4
0152	Income Tax II	72	4
0153	Economics	48	4
		264	16

Career Opportunities: Junior Cost Accountant, Tax Clerk.

SIXTH QUARTER			
0160	Accounting VI	72	4
0161	Human Relations	36	3
	°°Elective	48	3
0167	Field Project and/or Case Study	180	6
		336	16

Career Opportunities: Junior Accountant, Junior Executive Trainee, Audit Clerk, Administrative Clerk.

Total Contact Hours: 1,596 or 1,650
Total Credits: 93 or 94

°Field Project and/or Case Study — to be elected by one-year students only.

°°Electives:

0162	Auditing	48	3
0163	Office Management and Procedures	48	3
0164	Money and Banking	48	3
0165	Budgeting	48	3
0166	Introduction to Management	48	3

COURSE DESCRIPTIONS

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the accounting field.

0110 Accounting I — Hours: 72 — Credits: 4

This is an introduction to the fundamental principles, techniques and tools of accounting, giving an understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

COURSE DESCRIPTIONS Hours Credits

0111 Mathematics of Finance 60 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

0112 Technical Communications 48 3

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

0113 Typewriting I 72 3

This course is designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

0120 Accounting II 72 4

Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

0121 Business Communications 48 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

0122 Business Law I 36 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

0123 Office Calculating Machines 60 3

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

0124 Consumer Economics 36 3

Study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems are included in this course.

0130 Accounting III 72 4

This is an introduction to branch operation accounting with further development of skill and knowledge of accounting. The student is expected to learn journal and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long term liabilities, temporary investments and long term investments.

0131 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

COURSE DESCRIPTIONS Hours Credits

0132 Introduction to Data Processing and Programming 96 5

This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

0133 Business Principles and Organization 36 3

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, enterprises and their functions.

0134 Field Project and/or Case Study 90 4

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

0140 Accounting IV 72 4

This course covers intermediate accounting principles related to the form and content of the income statement and the balance sheet, cash receipts, cash disbursements, cash reconciliations, accounts receivable, bad debts, short-term financing and the concepts of cost or market inventory valuation.

0141 Income Tax I 72 4

Accounting procedure and problems connected with the Federal Income Tax Law and state laws for individuals, estates, and trusts.

0142 Cost Accounting I 72 4

A study of job-order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control and report forms.

0143 Business Law II 36 3

This course is a continuation of Business Law I with emphasis on topics which include bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.

0150 Accounting V 72 4

Intermediate and advanced accounting principles dealing with corporations, temporary investments, long term investments, special bond transactions amortization, revaluation of plant and equipment, retirement of plant and equipment, repairs and maintenance, depreciation, natural resources, intangible assets, goodwill, corporate earnings and corporate dividends.

0151 Cost Accounting II 72 4

This is a study of process cost accounting, standard cost procedures, estimating and controlling costs through use of budget and profit analysis.

0152 Income Tax II 72 4

This is a study of the accounting procedure and problems connected with the Federal Income Tax Law and state laws for corporations.

0153 Economics 48 4

Economics includes an analysis of national income accounts, the operation of the monetary and banking system and a survey

of international economic problems. It will also include some identification of economic principles at the industry level and includes economic analysis of pricing and output, the allocation of resources and distribution of income.

0160 Accounting VI 72 4

Advanced accounting principles dealing with consignments, business combinations, business liquidations and consolidated statement presentation.

0161 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

0162 Auditing 48 3

Public accounting organization and operation is studied, including internal control, internal auditing, verification of the balance sheet and operating accounts and the auditor's report of opinion.

0163 Office Management and Procedures 48 3

Management skills and techniques of business offices is emphasized. Human relations, personnel department functions and employment procedures are studied. Experience in applying skills and knowledges gained in office management situations will be provided.

COURSE DESCRIPTIONS Hours Credits

0164 Money and Banking 48 3

A study of monetary theory and banking theory as they relate to present-day domestic and international problems. Topics include banking operations, price changes, international monetary relationships and the application of monetary and fiscal policy.

0165 Budgeting 48 3

Procedures in the preparation and use of business budgets, with particular emphasis on them as aids in coordinating and directing business operations.

0166 Introduction to Management 48 3

A study of the vital role of management in organizations of various sizes. A close look at the inter-relationships of the various departmental functions and the establishment of lines of authority and responsibility. A manager's duties relating to communications, motivation and delegation of authority are treated.

0167 Field Project and/or Case Study 180 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

BUSINESS MANAGEMENT TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
0310	Accounting I	72	4
0311	Mathematics of Finance	60	5
0312	Typewriting I	72	3
0313	Office Calculating Machines	60	3
		264	15

Career Opportunities: General Office Clerk, Calculating Machines Operator, Payroll Clerk.

SECOND QUARTER			
0320	Accounting II	72	4
0321	Business Law I	36	3
0322	Small Business Finance	48	3
0323	Business Principles and Organization	36	3
0324	Technical Communications	48	3
		240	16

Career Opportunities: Payroll Accounting Clerk, Bookkeeper

THIRD QUARTER			
0330	Cost Accounting I	72	4
0331	Income Tax I	72	4
0332	Introduction to Management	36	3
0333	Business Communications	48	3
0334	Principles of Insurance or		
0335	Field Project and/or Case Study	90	4
		318	18

Career Opportunities: Cost Accounting Clerk, Accounting Clerk.

FOURTH QUARTER			
0340	Accounting III	72	4
0341	Cost Accounting II	72	4
0342	Oral Communications	36	3
0343	Human Relations	36	3
0344	Office Management and Procedures	48	3
		264	17

Career Opportunities: Junior Cost Accountant, Office Manager Trainee.

FIFTH QUARTER			
0350	Accounting IV	72	4
0351	Business Law II	36	3
0352	Purchasing and Inventory Control	72	4
0353	Budgeting	48	3
0354	Money and Banking	48	3
		276	17

Career Opportunities: Materials Handling Foreman Trainee, Business Manager Trainee.

SIXTH QUARTER			
0360	Personnel Supervision	60	4
0361	Marketing I	72	4
0362	Labor-Management Relations	72	4
0363	Field Project and/or Case Study	180	6
		372	18

Career Opportunities: Personnel Manager Trainee, Junior Executive Trainee.

Hours:	1,734
Total Credits:	101

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward business management.

0310 Accounting I — 72 — 4

This is an introduction to the fundamental principles, techniques and tools of accounting, giving an understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

0311 Mathematics of Finance — 60 — 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

0312 Typewriting I — 72 — 3

This course is designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

0313 Office Calculating Machines — 60 — 3

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

0320 Accounting II — 72 — 4

Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

0321 Business Law I — 36 — 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

COURSE DESCRIPTIONS Hours Credits

0322 Small Business Finance 48 3

Principles underlying the financial practices of modern small businesses, including the tools of analysis and decision making in directing the financial operations of a small business enterprise.

0323 Business Principles and Organization 36 3

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration and practices to develop an understanding of American business enterprises and their functions.

0324 Technical Communications 48 3

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

0330 Cost Accounting I 72 4

A study of job-order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control and report forms.

0331 Income Tax I 72 4

Accounting procedure and problems connected with the Federal Income Tax Law and state laws for individuals.

0332 Introduction to Management 36 3

A study of the vital role of management in organizations of various sizes. A close look at the inter-relationships of the various departmental functions and the establishment of lines of authority and responsibility. A manager's duties relating to communications, motivation and delegation of authority are treated.

0333 Business Communications 48 3

The skills needed to write business communications are taught in this course. This includes preparation of action getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

0334 Principles of Insurance 90 4

The various types of insurance, including life, health and accident, hospitalization, fire and storm, burglary, liability, automobile, marine, types of insurance companies, types of coverage, problems, government regulations are covered. This is an introductory course for further study in a specialized field.

0335 Field Project and/or Case Study 90 4

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

0340 Accounting III 72 4

An introduction to branch operation accounting. Further development of skill and knowledge of accounting. To learn journal and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long-term liabilities, temporary investments and long-term investments.

0341 Cost Accounting II 72 4

This is a study of process cost accounting, standard cost procedures, estimating and controlling costs through use of budget and profit analysis.

0342 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

COURSE DESCRIPTIONS Hours Credits

0343 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

0344 Office Management and Procedures 48 3

Management skills and techniques of business offices is emphasized. Human relations, personnel department functions and employment procedures are studied. Experience in applying skills and knowledges gained in office management situations will be provided.

0350 Accounting IV 72 4

This course covers advanced accounting principles related to the form and content of the income statement and the balance sheet, cash receipts, cash disbursements, cash reconciliations, accounts receivable, bad debts, short-term financing and the concepts of cost or market inventory valuation.

0351 Business Law II 36 3

This course is a continuation of Business Law I with emphasis on topics which include bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.

0352 Purchasing and Inventory Control 72 4

This course provides a practical approach to procurement with regard to price, quality, quantity and delivery. Personal ethics, legal aspects of contracts, records, performance, and foreign procurement standards are discussed in detail. The role of the purchasing section or department, as a member of management's value analysis team, is studied in depth.

0353 Budgeting 48 3

Procedures in the preparation and use of business budgets, with particular emphasis on them as aids in coordinating and directing business operations.

0354 Money and Banking 48 3

A study of monetary theory and banking theory as they relate to present-day domestic and international problems. Topics include banking operations, price changes, international monetary relationships and the application of monetary and fiscal policy.

0360 Personnel Supervision 60 4

The field of personnel administration, which includes the basic functions of all managers and the specialized functions of all managers and the specialized functions of personnel management. A combination of lecture, discussion and case analysis may be used here.

0361 Marketing I 72 4

This course is an introduction to the problems of manufacturers, wholesalers, and retailers as they relate to marketing goods and services. Attention is paid to channels of distribution.

0362 Labor-Management Relations 60 4

Students explore the development and application of the labor laws and practices that form the basis of modern-day industrial relations. Among the topics considered are the history and development of organized labor, Federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, Federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances and arbitration.

0363 Field Project and/or Case Study 180 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

COMPUTER PROGRAMMING

Data processing is a rapidly growing field with rapidly expanding opportunities for employment. Business, industry and science need fast service in the processing of data. Such data provides management with current information on which to base decisions. Well-trained people are urgently needed to develop and implement methods for data collection, processing and reporting.

The Computer Programming curriculum is designed to provide an integrated study of the theory and practice of data processing for business, industry and other institutional use.

The curriculum is designed to prepare students for employment as programmers, data processing control clerks, computer operators and other positions in organizations including wholesale and retail businesses, hospitals, governmental agencies, insurance companies, banks, transportation organizations, public utilities, manufacturing firms, distributors and similar organizations.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

COMPUTER PROGRAMMING

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
0510	Introduction to Data Processing and Programming	96	5
0511	Business Principles and Organization	36	3
0512	Technical Algebra	84	5
0513	Technical Communications	48	3
		264	16

Career Opportunities: Data Processing Control Clerk.

SECOND QUARTER			
0520	Cobol Programming I	96	5
0521	Computer Operations	72	5
0522	Problem Solving Techniques	48	3
0523	Business Communications	48	3
		264	16

Career Opportunities: Digital Computer Operator Trainee.

THIRD QUARTER			
0530	Cobol Programming II	96	5
0532	Accounting I	72	4
0533	Oral Communications	36	3
0540	Operating Systems	84	4
		288	16

Career Opportunities: Cobal Programmer Trainee.

FOURTH QUARTER		Hours	Credits
0531	Systems Analysis & Designs	96	5
0541	Introduction to Statistics	36	3
0542	Accounting II	72	4
	°Restricted Elective	96	5
		300	17

Career Opportunities: Programmer Trainee.

FIFTH QUARTER			
0550	Cost Accounting I	72	4
0551	Business Programming Applications	96	5
0552	Psychology	36	3
	°Restricted Elective	96	5
		300	17

Career Opportunities: Junior Programmer.

SIXTH QUARTER			
0560	Data Communications	48	4
0561	Field Project and/or Case Study	240	8
	°Restricted Elective	96	5
		384	17

Career Opportunities: Business Applications Programmer.

Total Contact Hours: 1,800
Total Credits: 99

°Restricted Electives:

0570	Assembler Language Program I	96	5
0571	Assembler Language Program II	96	5
0572	Fortran Programming	96	5
0573	Report Program Generator (R.P.G.)	96	5
0574	PL/1	96	5
0575	ANS Cobol	96	5

COURSE DESCRIPTIONS — **Hours** — **Credits**

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the computer industry.

0510 Introduction to Data Processing and Programming — **96** — **5**

This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

0511 Business Principles and Organization — **36** — **3**

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization,

principles, problems, management, control, facilities, administration and practices to develop an understanding of American business enterprises and their functions.

0512 Technical Algebra 84 5

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. An emphasis is placed on scientific notation, powers, and roots with slide rule techniques included.

0513 Technical Communications 48 3

Training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

0520 Cobol Programming I 96 5

This course provides the student with a working knowledge of the programming language Cobol and its application to business data processing. Through laboratory experience, the student will gain proficiency in solving basic business problems with the Cobol language.

0521 Computer Operations 72 5

The student will learn actual computer operations and will become proficient in handling and setting up complex disk and tape file runs. The student will learn to run book and message control functions and to read job descriptions and flow charts.

0522 Problem Solving Techniques 48 3

This course will familiarize the student with those techniques necessary for the efficient solution of computer programming logic problems. Logic examples and exercises are used to develop student confidence and the ability to solve programming problems.

0523 Business Communications 48 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

0530 Cobol Programming II 96 5

This course is a continuation of Cobol Programming I with emphasis on complex file handling techniques and the use of advanced Cobol extensions. Laboratory experience will develop a higher level of proficiency in the use of Cobol while developing a working knowledge of the use of advanced Cobol features and techniques.

0531 Systems Analysis and Designs 96 5

Functions and techniques of systems analysis, design, and development. Topics include science analysis, system flow charting, data collection techniques, file design and management determination of processing and equipment requirements. Communications between user and the data processing department will be stressed as well as reporting methods. Study and analysis of problems that may be encountered and the possible solution to those problems by the use of case studies are covered in this course.

0532 Accounting I 72 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

0533 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

0540 Operating Systems 84 4

A study of computer operating systems, their purpose, structure and various functions. The course will provide the student with a general understanding of how comprehensive sets of language translators and service programs operating under the supervisory coordination of an integrated control program form the total operating system of a computer.

0541 Introduction to Statistics 36 3

Descriptive statistics (collection and presentation of data, frequency distributions, measures of central tendency, dispersion and skewness), index numbers, simple correlation and regression, curve fitting and introduction to statistical inference, sampling and probability are studied.

0542 Accounting II 72 4

Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

0550 Cost Accounting I 72 4

A study of job order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control and report forms.

0551 Business Programming Applications 96 5

An advanced course in the study of business programming applications with topics relating to distribution, manufacturing, banking and insurance corporations. Specific applications include billing, accounts receivable, sales analysis, payroll, inventory, and cost. These will be supported by a brief sketch of manual methods with a more detailed discussion in terms of computer systems and with exercises in programming.

0552 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

0560 Data Communications 48 4

This course develops in the student familiarity with modern data communications techniques as applied to data processing. The student learns the vocabulary and techniques common to remote processing, time sharing, data transmission and similar topics.

0561 Field Project and/or Case Study 240 8

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

0570 Assembler Language Programming I 96 5

This course will familiarize the student with a machine-oriented low-level programming language. The language taught will depend on machine access and will concentrate on the instruction set used for commercial application. Laboratory will include coding, debugging and testing of assembler language programs.

0571 Assembler Language Programming II 96 5

A continuation of Assembler Language Programming I with emphasis on disc and tape programming techniques.

0572 Fortran Programming 96 5

Introduction to a computational type of problem oriented language; use of arithmetical expressions, conditional control, iteration techniques, input-output specifications, tables, and subprograms to solve problems which involve computation.

0573 Report Program Generator (R.P.G.) 96 5

This course covers the use of the compiler language R.P.G. as a means of solving business problems. It covers the areas of multiple input and/or output, the use of business mathematics in the solution to business and other problems. Upon completion of this course the student is expected to be productive with R.P.G. as a compiler language.

COURSE DESCRIPTIONS Hours Credits

0574 PL/I Programming 96 5

This course will familiarize the student with the PL/I programming language, its capabilities and limitations. The student will learn to use PL/I to solve a variety of programming problems. Laboratory will include coding, debugging and testing of PL/I programs.

0575 ANS COBOL 96 5

Emphasis on the difference between COBOL used by certain manufacturers and the American National Standard COBOL. Stress is placed on sort feature and report writer feature.

HOTEL-MOTEL MANAGEMENT TECHNOLOGY

Inns have been a part of the world scene since earliest times. Today, "food and lodging" is one of the mammoth industries in America in terms of sales and the employment of trained people. The hotel executive is always seeking greater efficiency in all departmental functions.

The management-level employee of any size hotel must be knowledgeable in all facets of this type of business — one of the most complex of organizations. For this reason, training includes the study of finance, food and beverage management, public relations, advertising, housekeeping and personnel management.

Employment opportunities may be found as audit clerk, food and beverage supervisor, sales representative, or management trainee, to name a few.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

HOTEL-MOTEL MANAGEMENT TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
0710	Mathematics of Finance	60	5
0711	Introduction to Hotel-Motel Management and Organ.	96	5
0712	Hotel-Motel Front Office Procedures	48	3
0713	Technical Communications	48	3
		252	16

Career Opportunities: Hotel Cashier.

SECOND QUARTER			
0720	Accounting I	72	4
0721	Typewriting I	72	3
0722	Introduction to Motor Hotel Management	60	5
0723	Business Principles and Organization	36	3
		240	15

Career Opportunities: Hotel-Motel Clerk.

THIRD QUARTER			
0730	Hotel-Motel Records Management	48	3
0731	Accounting II	72	4
0732	Techniques of Hotel-Motel Supervision I	72	4
0733	Hotel-Motel Food and Beverage Management and Service	48	4
		240	15

Career Opportunities: Hotel-Motel Audit Clerk, Hotel-Motel Bookkeeper.

FOURTH QUARTER		Hours	Credits
0740	Techniques of Hotel-Motel Supervision II	72	4
0741	Business Communications	48	3
0742	Hotel-Motel Food and Beverage Purchasing and Control	84	5
0743	Business Law I	36	3
		240	15

Career Opportunities: Food and Beverage Supervisor Trainee

FIFTH QUARTER			
0750	Oral Communications	36	3
0751	Business Law II	36	3
0752	Hotel-Motel Sales	48	3
0753	Field Project and/or Case Study	180	6
		300	15

Career Opportunities: Hotel-Motel Sales Representative.

SIXTH QUARTER			
0760	Hotel-Motel Maintenance and Engineering	36	3
0761	Human Relations	36	3
0762	Hotel-Motel Supervisory Housekeeping	48	3
0763	Field Project and/or Case Study	180	6
		300	15

Career Opportunities: Hotel-Motel Management Trainee.

Total Contact Hours: 1,572
Total Credits: 91

COURSE DESCRIPTIONS — **Hours** — **Credits**

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the hotel-motel industry.

0710 Mathematics of Finance — **60** — **3**

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

0711 Introduction to Hotel-Motel Management and Organization — **96** — **5**

This course is designed to give the background of hotel-motel management from early innkeeping to the modern skyscraper hotel. Organization of hotel operations, opportunities and trends will be stressed.

COURSE DESCRIPTIONS Hours Credits

0712 Hotel-Motel Front Office Procedures 48 3

Develops the area of human and public relations responsibilities of the front office salesmanship, cashier's charges, posting machines and some legal aspects of innkeeping.

0713 Technical Communications 48 3

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

0720 Accounting I 72 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

0721 Typewriting I 72 3

This course is designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques, skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

0722 Intro. to Motor-Hotel Management 60 5

A study for operators of small and large properties. Emphasizes administrative techniques for today's motor-hotel operators such as history, space utilization and business practices.

0723 Business Principles and Organization 36 3

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

0730 Hotel-Motel Records Management 48 3

A study of records peculiar to the hospitality industry, including accounting records, financial statements and billing procedures.

0731 Accounting II 72 4

Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

0732 Techniques of Hotel-Motel Supervision I 72 4

Course is designed to assist the student in learning supervisory skills and organizational methods for maximizing the employer's day-to-day work performance.

0733 Hotel-Motel Beverage Management and Service 48 4

An overview for complete food and beverage operations which extends from purchasing, receiving and storage to preparation and service.

0740 Techniques of Hotel-Motel Supervision II 72 4

This is an extension of Techniques of Hotel-Motel Supervision I and develops a higher degree of competence needed for effective management of people of all job levels found in hotels and motels. It covers communications, motivation, delegation of authority, orienting and inducting new employees, and employee performance evaluation.

COURSE DESCRIPTIONS Hours Credits

0741 Business Communications 48 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

0742 Hotel-Motel Food and Beverage Purchasing and Control 84 5

A detailed study of the major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages, poultry and eggs, fish and shell fish, meats and alcoholic beverages. The course outlines the essentials of effective food and beverage control. Establishes a system for determining sale values for food and beverages.

0743 Business Law I 36 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

0750 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

0751 Business Law II 36 3

This course is a continuation of Business Law I with emphasis on topics which include bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.

0752 Hotel-Motel Sales 48 3

A critical study of effective techniques for promoting the industry through application of principles of sales, service, marketing, advertising media, and public relations.

0753 Field Project and/or Case Study 180 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

0760 Hotel-Motel Maintenance and Engineering 36 3

Examines the organization of the engineering department. Discusses plumbing, heating ventilation, refrigeration and air conditioning, and electrical systems. Vertical transportation, structural maintenance, painting, landscaping, contracts, communication, acoustics, fire protection and maintenance of kitchen equipment represent the content of this course.

0761 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

0762 Hotel-Motel Supervisory Housekeeping 48 3

Provides a functional knowledge of the supervisor's duties such as recordkeeping, staffing, and employee training pertaining particularly to training and supervision of those employees whose duties relate directly to housekeeping.

0763 Field Project and/or Case Study 180 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

INDUSTRIAL MANAGEMENT TECHNOLOGY

The Industrial Management Technology curriculum prepares students for success in fields of industrial management and supervision, such as first line supervision, foremanship or top management of small and medium sized firms.

The courses are designed to provide a broad understanding of the principles of supervision and management as well as the opportunity to acquire competence in fundamental methods and techniques for efficient and effective application of these principles. Included in the curriculum is a study of supervision, training techniques, economics, organization and management leadership, with specialized study in materials management, work simplification and labor law.

The program emphasizes problem solving techniques for the development and improvement of managerial talent.

The program is also helpful for persons currently employed in the various categories of management to further develop basic and well-rounded educational experiences to support their job experience.

Graduates of the Industrial Management Technology program may find employment in industrial training, safety and first aid, work/simplification, quality control, technical report writing, cost control, production supervision and other related areas.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

INDUSTRIAL MANAGEMENT TECHNOLOGY

Associate Degree

After testing and guidance counseling, units from the skills advancement studies may be individually prescribed for those students requiring review in communications skills and mathematics to the level considered necessary to enter first quarter courses. It is also possible through testing and guidance counseling to identify students who may qualify for advanced standing because of previous occupational experience or formal training.

FIRST QUARTER		Hours	Credits
0910	Introduction to Technical Communications	48	3
0911	Technical Mathematics	60	4
0912	Manufacturing Organization and Management	60	3
0913	Techniques of Supervision I	60	3
		228	13
SECOND QUARTER			
0920	Technical Communications	48	3
0921	Industrial Safety and Plant Protection	48	3
0922	Laws as Applied to Industry	48	3
0923	Techniques of Supervision II	60	3
0924	Physical Science	60	4
		264	16

Career Opportunities (Cert. of Prof.): Plant Protection Trainee, Supervisor Trainee.

THIRD QUARTER		Hours	Credits
0930	Technical Reporting	60	4
0931	Motion and Time Study	60	4
0932	Safety Regulations	60	3
0933	Introduction to Data Processing	48	3
		228	14

Career Opportunities (Technical Cert.): Technical Report Writer, Time Study Analyst, Industrial Safety Technician.

FOURTH QUARTER			
0940	Quality Control	48	3
0941	Labor-Management Relations	60	3
0942	Purchasing and Inventory Control	60	3
0943	Oral Communications	36	3
0944	Blueprint Reading	60	4
		264	16

Career Opportunities (Technical Cert.): Purchasing Clerk, Supply Clerk, Materials Clerk, Quality Control Technician.

FIFTH QUARTER			
0950	Manufacturing Cost and Value Analysis	60	3
0951	Production and Inventory Control	60	3
0952	Job Analysis and Evaluation	48	3
0953	Human Relations	36	3
0954	Handling and Storage of Industrial Materials	48	4
		252	16

Career Opportunities (Technical Cert.): Production Control Managerial Trainee, Line Foreman Trainee.

SIXTH QUARTER			
0960	Economics of Industry	60	3
0961	Plant Layout and Process Planning	60	3
0962	Traffic and Transportation Management	48	3
0963	Accounting for Managers	48	3
0964	Industrial Assembly Techniques	48	4
		264	16

Career Opportunities (Associate Degree): Industrial Training Assistant, Department Manager Trainee, Industrial Engineering Technician.

Total Contact Hours: 1,500
Total Credits: 91

COURSE DESCRIPTIONS — Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction trailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the industrial management field.

COURSE DESCRIPTIONS Hours Credits

0910 Introduction to Technical Communications 48 3

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

0911 Technical Mathematics 60 4

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

0912 Manufacturing Organizations and Management 60 3

An in-depth study oriented to the first-line supervisor and other management personnel who are interested in the interrelationships of the various departmental functions and the overall management problems encountered in a manufacturing organization. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organization structure. Also reviewed are manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems.

0913 Techniques of Supervision I 60 3

This course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducting new employees, and evaluation of employee performance.

0920 Technical Communications 48 3

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

0921 Industrial Safety and Plant Protection 48 3

This course covers day-to-day responsibilities of management and supervision to obtaining an accident-free organization. Emphasis is placed on first aid, fire prevention, mounting of guards, control, starting and stopping of machines, accident investigations and other preventive measures. Also covered are the methods of advertising good safety practices, rules of plant protection in relation to safety.

0922 Laws as Applied to Industry 48 3

An up-to-date study of legislation that affects business and industry today, including the Occupational Safety and Health Act, hiring and employment practices, and environmental protection.

0923 Techniques of Supervision II 60 3

This course is designed to develop the necessary skills needed for effective management of people. The various topics will be developed through group discussion, case studies, and in-basket situations.

0924 Physical Science 60 4

The basic concepts of physics and chemistry are introduced including measurements, heat and forces and their effect on metals and other materials. Emphasis is on the practical application of the physical sciences.

COURSE DESCRIPTIONS Hours Credits

0930 Technical Reporting 60 4

Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

The subjects will include elemental breakdown sheets, leveling factors, variables, M.T.M. application, standard data, general purpose data, sampling study, direct and indirect standards, and graphical general purpose data, sampling study, direct and indirect standards, and graphical expression.

0931 Motion and Time Study 60 4

A study of time and motion in the practical application area, using industrial practice as a basis for the establishment of rates.

0932 Safety Regulations 60 3

A study of the recording and maintaining of an accident severity rate, correctly submitting workman's compensation claims, insurance claims and managing a safety program in compliance with laws or contractual agreements.

0933 Introduction to Data Processing 48 3

This course provides the management-level person with an understanding of the scope and significance of data processing, including punched-card unit record equipment, electronic data processing equipment, and basic computer concepts.

0940 Quality Control 48 3

Emphasis is placed on the principles and techniques of quality control to fulfill the organizational objectives of completing the job correctly the first time. The purpose of the course is to provide unit managers and supervisors with an understanding of the use of scientific quality control. Topics covered include vender-customer relationships, sampling inspections, process control and tests for significance. Emphasis is placed on an individual being able and qualified to determine what type of quality control is best for a particular industry.

0941 Labor-Management Relations 60 3

Students explore the development and application of labor laws and practices that form the basis of modern day industrial relations. Among the topics considered are the history and development of organized labor, Federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, Federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances, and arbitration.

0942 Purchasing and Inventory Control 60 3

This course provides a practical approach to procurement with regard to price, quality, quantity and delivery. Personal ethics, legal aspects of contracts, records, performance, and foreign procurement standards are discussed in detail. The role of the purchasing section or department, as a member of management's value analysis team, is studied in depth.

0943 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

0944 Blueprint Reading 60 4

Instruction and practice in the study of working drawings and application of understandings from the "print" to the "work." Students will concentrate on the kinds of working plans analogous to the occupational interest area. Typical units will include the relationship of views and details, interpretation of dimensions, transposing scale, tolerances, electrical symbols, schematic diagrams, welding symbols, sections, material symbols, material lists, architectural plates, room schedules and plot plans.

0950 Manufacturing Costs and Value Analysis 60 3

This course applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development, and manufacturing without affecting quality. It differs from cost control because it is directed toward analyzing value — not cost.

0951 Production and Inventory Control 60 3

This course is designed to bring the range of concept and techniques to useful application in the practical design of production planning, inventory control systems, and follow-up.

0952 Job Analysis and Evaluation 48 3

This course covers the principles of objective job analysis, establishment of proper job description and development of job content, requirements and limitations. The evaluation studies cover various approaches to job evaluation such as ranking, factor or point comparison and the relationships of results to wage scales.

0953 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

0954 Handling and Storage of Industrial Materials 48 4

A study of applied stresses and quality controls of industrial materials while handling and storing. Shelf life of certain materials, weight and mass configuration, and vendor's materials specifications.

0960 Economics of Industry 60 3

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

0961 Plant Layout and Process Planning 60 3

Factory planning is studied with emphasis on the most efficient arrangements of work areas to achieve lower manufacturing costs. Layouts for small- and medium-sized plants, layout fundamentals, selection of production equipment and materials handling equipment will be covered. The principles, practices and methods of process planning are included as well as tooling determination, operational sequence, setup and operational time, routing forms and interpretation of charts, and process analysis of selected jobs.

0962 Traffic and Transportation Management 48 3

This course is presented for the development of personnel associated with or working in the transportation and traffic management field. The course is designed to cover intermediate management, technical development and other phases of transportation organizations. It includes discussions covering the American transportation system, Federal regulations, freight traffic territory, freight classification, principles of freight rates and tariffs, shipping documents and their application, special freight services, and a study of freight claims.

0963 Accounting for Managers 48 3

Basic concepts and issues of accounting for internal planning, decision-making, and control for the management-level or potential management-level employee.

0964 Industrial Assembly Techniques 48 4

A study of methods of assembly, fasteners, the uniqueness of various assembly materials, metallurgy, plastics and modern composition.

MARKETING TECHNOLOGY

The economy of our country is dependent upon our ability to distribute the goods we produce, and there is an increasing demand for men and women who are prepared to fill mid-management marketing positions.

Industrial marketing technicians may be known as industrial or wholesale salesmen, factory representatives, or service representatives. They work for manufacturers, distributors, service firms, or wholesalers, and they are involved in some phase of the movement of goods from factory to consumer.

Their firms may sell hundreds of items or only one; the product may be highly technical or non-technical; they may sell their product to other businesses — factories, railroads, banks, wholesalers, retailers, hospitals or schools. An industrial salesman represents his firm in an assigned territory. He introduces new products, sells established items, and is of service to his customers.

The volume of retail sales in Indiana has tripled in the past 20 years and has led to an increased need for people trained in retail marketing — people who do more than just "wait on" customers. A good salesperson is friendly and helpful to the customer and knows how to generate buying excitement and how to display merchandise effectively. He understands the guidelines of successful operation of a business.

Advanced positions in retail marketing call for people who know how to establish sales goals, how to keep inventory in balance with demand, and how to hire and train employees. The occupational opportunities of this program are many and varied. Employment may be acquired as a management trainee, fashion buyer, manufacturers representative or in the area of advertising display, sales promotion, technical writing or customer service.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

MARKETING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

		Hours	Credits
FIRST QUARTER			
1110	Marketing I	72	4
1111	Salesmanship	84	5
1112	Credit Procedures	48	3
1113	Technical Communications	48	3
		252	15
SECOND QUARTER			
1120	Marketing II	72	4
1121	Business Communications	48	3
1122	Mathematics of Finance	60	5
1123	Principles of Retailing		
	or		
1124	Manufacturing Organization and Management	72	4
		252	16

Career Opportunities: Stock Record Clerk.

THIRD QUARTER			
1130	Marketing III	72	4
1131	Oral Communications	36	3
1132	Accounting I	72	4
1133	Principles of Insurance	60	4
		240	15

Career Opportunities: Salesman, Retail Store Bookkeeper.

FOURTH QUARTER			
1140	Sales Management	72	5
1141	Stock Control Systems	60	4
1142	Physical Distribution	72	4
1143	Principles of Wholesaling		
	or		
1144	Merchandise Buying	72	4
		276	17

Career Opportunities: Sales Management Trainee.

FIFTH QUARTER			
1150	Principles of Advertising	72	4
1151	Human Relations	36	3
1152	Purchasing and Inventory Control		
	or		
1153	Techniques of Merchandise Display	72	4
1154	Retail Store Management		
	or		
1155	Techniques of Fashion Buying	72	5
		252	16

Career Opportunities: Fashion Buyer Trainee.

SIXTH QUARTER			
1160	Business Law I	36	3
1161	Consumer Economics	36	3
1162	Field Project and/or Case Study	180	6
1163	Labor-Management Relations		
	or		
1164	Textiles	48	4
		300	16

Career Opportunities: Marketing Management Trainee, Store Management Trainee.

Total Contact Hours: 1,572
Total Credits: 95

COURSE DESCRIPTIONS

Skills Advancement Units — Hours: —; Credits: —

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward marketing.

COURSE DESCRIPTIONS	Hours	Credits

1110 Marketing I 72 4

This course is an introduction to the problems of manufacturers, wholesalers, and retailers as they relate to marketing goods and services. Attention is paid to channels of distribution.

1111 Salesmanship 84 5

This is a survey course of sales and the techniques of selling products and services. Equal stress is placed on selling the product as well as selling the service. The course covers all phases of the sales including approach, demonstration, close and departure. A short selection is given on development of the personality and the art of selling one's self.

1112 Credit Procedures 48 3

Principles and methods of credit administration in the mercantile and retail field, including sources of information, credit policy, credit control, legal remedies, and collection techniques are covered.

0113 Technical Communications 48 3

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1120 Marketing II 72 4

A continuation of Marketing I. Types of business enterprises, how to enter business, competition, pricing, market research, credit policies, and management techniques are discussed.

1121 Business Communications 48 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

1122 Mathematics of Finance 60 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

1123 Principles of Retailing 72 4

Topics covered are business location, building fixtures and equipment, store layout, retail management organization, purchasing procedures, merchandise discounts and ordering policies, product inventory control systems, planning the merchandise budget, receiving, checking and marketing merchandise, retail store promotions, pricing, retail store services and trends in marketing.

1124 Manufacturing Organizations and Management 72 4

An in-depth study oriented to the first-line supervisor and other management personnel who are interested in the interrelationships of the various departmental functions and the overall management problems encountered in a manufacturing organization. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organizational structure. Also reviewed are manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering, and manufacturing information systems.

1130 Marketing III 72 4

This portion of marketing considers the distributive structure, the pricing system, promotional activities, and planning and evaluating of the marketing effort.

COURSE DESCRIPTIONS	Hours	Credits

1131 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

1132 Accounting I 72 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

1133 Principles of Insurance 60 4

The various types of insurance, including life, health, and accident, hospitalization, fire and storm, burglary, liability, automobile, marine, types of insurance companies, types of coverage, problems, government regulations are covered.

1140 Sales Management 72 5

Product planning, investigation of the market, sales organizations, sales programs and campaigns, and management of sales and service personnel including selection, training, and supervision.

1141 Stock-Control Systems 60 4

A study of stock or inventory control systems used by wholesale and retail establishments. Topics include various systems and physical equipment necessary for efficient control. The first two and one-half weeks are devoted to slide rule.

1142 Physical Distribution 72 4

An overview of physical distribution relative to warehousing, costs, legislation, and physical handling are among the topics.

1143 Principles of Wholesaling 72 4

This is an advanced study of the evolution, economic status, and management of non-retail marketing, the position of wholesaling in distribution, kinds of wholesaling, types of middlemen, internal organization and operation of wholesalers, trading areas, and an advanced analysis of the relationship between marketing policies of wholesaler and manufacturer and changing patterns of wholesale distribution.

1144 Merchandise Buying 72 4

Analysis is made of the principles and methods that determine successful merchandise selection. Included in the study are organizations for buying, knowing what to buy, determining where and how to buy, and the aspects of merchandising involved in selling.

1150 Principles of Advertising 72 4

The purposes of advertising, the economic and social aspects of advertising, slogans, trademarks, idea visualization, the mechanical production of advertisements, the media plan, newspaper advertising, radio advertising, television advertising, direct mail advertising, outdoor advertising, packaging and labeling, and the advertising campaign will be covered.

1151 Human Relations 36 3

In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

1152 Purchasing and Inventory Control 72 4

This course provides a practical approach to procurement with regard to price, quality, quantity and delivery. Personal ethics, legal aspects of contracts, records, performance, and foreign procurement standards are discussed in detail. The role of the purchasing section or department, as a member of management's value analysis team, is studied in depth.

1153 Techniques of Merchandise Display 72 4

The principles of exterior and interior display techniques are applied in practical situations using design elements, color, and arrangement theories. The student constructs various kinds of displays. The basic skills involved in simple showcard lettering as it applies to displays are taught.

1154 Retail Store Management 72 5

The principles of operation and management applicable to small stores are studied. Special attention is paid to investigating business opportunities, organizing, financing, and controlling small business. Group projects are investigated by students in areas such as financing, incorporating, and obtaining legal advice.

1155 Techniques of Fashion Buying 72 5

The background, evolution, economic status, and importance of the fashion industry are covered. Emphasis is placed on the nature of fashion products, purchase motivation, and current practices in the purchasing of fashion.

1160 Business Law I 36 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

1161 Consumer Economics 36 3

Study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems are included in this course.

COURSE DESCRIPTIONS Hours Credits

1162 Field Project and/or Case Study 180 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1163 Labor-Management Relations 48 4

Students explore the development and application of the labor laws and practices that form the basis of modern day industrial relations. Among the topics considered are the history and development of organized labor, Federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, Federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances, and arbitration.

1164 Textiles 48 4

Textiles, including their fiber content, uses, characteristics and care are studied. Textile law interpretation and labeling regulations are covered. Some emphasis is placed on textiles used for floor, wall and upholstery covering.

SECRETARIAL SCIENCES

Few business or industrial enterprises can function effectively without an adequately trained staff of secretarial and clerical assistants.

With more people seeking office employment and with the growing demand for personnel with advanced education and training, secretarial aspirants today need to be concerned with the acquisition of education beyond high school.

Employers expect more than mere demonstration of acquired proficiencies in taking dictation, typewriting and filing. They seek thoroughly trained employees who have developed initiative, who are capable of assuming responsibility and authority, and who have poise and a wide background of interests essential for advancement.

The secretarial science curricula provide students with the education and training which will enable them to achieve the level of competence demanded in business, industry, government, the legal and medical fields and other institutions.

An attractive feature of these programs is their flexibility. Students who choose to pursue the Associate Degree program have the option of acquiring the necessary competency in shorthand or accounting in order to qualify for many secretarial-related jobs as they progress through the program. Additionally, those particularly interested in employment in the legal or medical fields can select either the Legal Secretarial or Medical Secretarial programs each leading to a Technical Certificate. These programs contain only those courses specifically designed for successful employment in the legal or medical professions.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

SECRETARIAL — ADMINISTRATIVE

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
1210	Shorthand I		
	or		
1211	Accounting I	72	4
1212	Typewriting I	72	3
1213	Technical Communications	60	5
1214	Personal Development	36	3
		240	15

Career Opportunities: General Office Clerk, Receptionist.

SECOND QUARTER		Hours	Credits
1220	Shorthand II		
	or		
1225	ABC Shorthand I		
	or		
1221	Accounting II	72	4
1222	Typewriting II	72	3
1223	Mathematics of Finance	60	5
1224	Records Management	36	3
		240	15

Career Opportunities: File Clerk, Clerk-Typist, Bookkeeper.

THIRD QUARTER			
1230	Shorthand III		
	or		
1235	ABC Shorthand II		
	or		
1231	Accounting III		
	or		
1233	Key Device Training	72	4
1232	Typewriting III	72	3
1234	Business Communications for Secretaries	60	5
1236	Office Calculating Machines	60	3
		264	15

Career Opportunities: Typist, Stenographer, Keypunch Operator, Accounting Clerk, Calculating Machines Operator.

FOURTH QUARTER			
1240	Shorthand IV		
	or		
1244	ABC Shorthand III		
	or		
1225	ABC Shorthand I	72	4
1241	Clerical Office Procedures	60	5
1242	Typewriting IV	72	3
1243	Office Management and Procedures	48	3
		252	15

Career Opportunities: General Secretary, Production Typist.

FIFTH QUARTER			
1250	Shorthand V		
	or		
1255	ABC Shorthand IV		
	or		
1235	ABC Shorthand II	72	4
1251	Business Law I	36	3
1252	Oral Communications	36	3
1253	Human Relations	36	3
1254	Introduction to Data Processing	60	3
		240	16

Career Opportunities: Office Manager Trainee, Advanced Stenographer.

SIXTH QUARTER			
1260	Shorthand VI		
	or		
1265	ABC Shorthand V		
	or		
1261	Administrative Office Practice	72	4

		Hours	Credits
1262	Typewriting V	72	3
1263	Business Principles and Organization	36	3
1264	Field Project and/or Case Study	180	6
		360	16

Career Opportunities: Administrative Secretary, Office Manager.

Total Contact Hours: 1,596
Total Credits: 92

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the secretarial field.

1210 Shorthand I — 72 — 4

An introductory course in shorthand with special emphasis upon basic theory, brief forms and speed in reading from plate notes. Dictation is introduced with emphasis placed on writing and transcription techniques.

1211 Accounting I — 72 — 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

1212 Typewriting I — 72 — 3

A course designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care and speed development.

1213 Technical Communications — 60 — 5

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1214 Personal Development — 36 — 3

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality, and communication skills so they possess the personal qualities considered necessary for success in their chosen field.

1220 Shorthand II — 72 — 4

This course places emphasis in writing and transcribing dictated subject matter and the development of skill in formulating new outlines in accordance with the basic principles of shorthand. Extension of transcription techniques and practice as well as the essentials of good English principles are stressed.

1221 Accounting II — 72 — 4

Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

COURSE DESCRIPTIONS — Hours — Credits

1222 Typewriting II — 72 — 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of business letters, forms, manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building.

1223 Mathematics of Finance — 60 — 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

1224 Records Management — 36 — 3

Students are acquainted with the methods and procedures of maintaining business records of various types. Skills are developed in implementing those methods and procedures in practice situations.

1225 ABC Shorthand I — 72 — 4

This course provides an alternative shorthand using letters of the alphabet rather than shorthand symbols. It may be elected by students planning to complete the technical certificate or continuing education students wishing to learn rapid writing skills in a short time.

1230 Shorthand III — 72 — 4

This course includes a continued review of fundamentals and an emphasis on skill in taking new matter dictation and mailable transcription. Essentials of good English principles are stressed.

1231 Accounting III — 72 — 4

An introduction to branch operation accounting. Further development of skill and knowledge of accounting. To learn journalism and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long-term liabilities, temporary investments and long-term investments.

1232 Typewriting III — 72 — 3

This course is designed to improve production typewriting ability in business situations. Problem and production techniques will include complex tabulation, statistical reports, rough drafts, manuscripts and forms.

1233 Key Device Training — 72 — 4

This course is designed to develop a high level of skill in operating key punch, or key to tape, or key to disc equipment. Speed and accuracy are stressed.

1234 Business Communications for Secretaries — 60 — 5

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive. Review and additional stress is placed on spelling and vocabulary building considered essential to a competent secretary.

1235 ABC Shorthand II — 72 — 4

A continuation of abc Shorthand I emphasizing greater speed and accuracy.

1236 Office Calculating Machines — 60 — 3

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

COURSE DESCRIPTIONS	Hours	Credits

1240 Shorthand IV 72 4

A continuation of Shorthand III (1230).

1241 Clerical Office Procedures 60 5

This course will acquaint the student with opportunities available to clerical workers, including the general qualifications required. It will permit the student to learn such skills as filing, machine transcription, duplicating machine techniques, and receptionist training. An introduction to duties of the Legal, Medical, and Administrative secretary is also provided.

1242 Typewriting IV 72 3

A continuation of Typewriting III (1232).

1243 Office Management and Procedures 48 3

Management skills and techniques of business offices is emphasized. Human relations, personnel department functions and employment procedures are studied. Experience in applying skills and knowledges gained in office management situations will be provided.

1244 ABC Shorthand III 72 4

A continuation of abc Shorthand I and II with more emphasis on speed and accuracy on new and more technical material and mailable transcription. Good English principles are emphasized.

1250 Shorthand V 72 4

A continuation of Shorthand III and IV with much emphasis being placed on technically specialized materials.

1251 Business Law I 36 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

1252 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

1253 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

1254 Introduction to Data Processing 60 3

This course covers the history of data processing, scope and significance of data processing, punched card unit records, electronic data processing equipment and basic computer concepts.

COURSE DESCRIPTIONS	Hours	Credits

1255 ABC Shorthand IV 72 4

A continuation of abc Shorthand III, with stress on speed building and production of mailable copy. Good English principles are emphasized.

1260 Shorthand VI 72 4

This course includes an emphasis on speed building, new matter dictation and some transcription work on the production of mailable copy. The material is designed to acquaint the student with technical terminology, phrases and abbreviations peculiar to certain organizations.

1261 Administrative Office Practice 72 4

This is designed as a finishing course emphasizing the skills, techniques, and attitudes businessmen desire in office workers, including review instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job. Laboratory experience in applying skills and knowledge gained in previous business courses will be provided.

1262 Typewriting V 72 4

This course stresses the improvement of production techniques which will include: correspondence, business forms, manuscripts, tabulation and secretarial projects. Students will also transcribe machine-recorded dictation. Correct use of grammar, spelling and letter format will be stressed along with the development of a high degree of productivity and skill.

1263 Business Principles and Organization 36 3

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

1264 Field Project and/or Case Study 180 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1265 ABC Shorthand V 72 4

The course content includes technical dictation and transcription and the production of mailable copies on documents and forms found in certain organizations. Terminology of a highly technical nature is emphasized.

SECRETARIAL — LEGAL
Technical Certificate

After testing and guidance counseling, courses from the skills advancement studies may be individually prescribed for those students requiring review in communications skills and mathematics to the level considered necessary to enter first quarter courses. It is also possible through testing and guidance counseling to identify students who may qualify for advanced standing because of previous occupational experience or formal training.

		Total Contact Hours	Credits
FIRST QUARTER			
1310	Legal Terminology	24	2
1311	Personal Development	36	3
1312	Typewriting I	72	3
1313	Legal Office Bookkeeping, or		
1314	ABC Shorthand I, or		
1315	Shorthand I	72	4
1316	Technical Communications	48	4
		252	16

Career Opportunities: Legal Office Clerk
Legal Office Receptionist

SECOND QUARTER			
1320	Business Law I	36	3
1323	Mathematics of Finance	60	5
1322	Typewriting II	72	3
1321	Legal Office Procedures, or		
1324	ABC Shorthand II, or		
1325	Shorthand II	72	4
		240	15

Career Opportunities: Legal Office Typist
Legal Office Stenographer

THIRD QUARTER			
1330	Human Relations	36	3
1331	Legal Office Communications	36	3
1332	Typewriting III (Legal)	72	3
1333	Business Law II	36	3
1334	ABC Shorthand III (Legal), or		
1335	Shorthand III (Legal), or		
1336	Office Calculating Machines	72	4
		252	16

Career Opportunities: Legal Office Typist
Legal Office Stenographer

FOURTH QUARTER			
1340	Oral Communications	36	3
1341	Legal Office Practice	60	5
1342	Typewriting IV (Legal)	72	3
1343	Field Project and/or Case Study, or Elective (Optional)	60	5
1344	ABC Shorthand (Legal), or		
1345	Shorthand IV (Legal)	72	4
		240-300	15-20

Career Opportunities: Legal Secretary
Legal Stenographer

Total Contact Hours: 984-1044
Total Credits: 62- 67

SECRETARIAL — LEGAL

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills and science with supplementary material oriented toward the legal profession.

1310 Legal Terminology — 24 — 2

This course presents the ethics of law, professional conduct and words from Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of legal words through the Latin parts, correct spelling of these terms, and the intelligent use of the legal dictionary.

1311 Personal Development — 36 — 3

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen field.

1312 Typewriting I — 72 — 3

This is a course designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts, their care and speed development.

1313 Legal Office Bookkeeping — 72 — 4

A course designed to introduce the basic principles of bookkeeping as utilized primarily in a legal office setting. This course includes the principles of debit and credit, double entry bookkeeping, use of journals (particularly combined journal) and analyzing transactions. Also included are the use of ledgers, posting procedures, cash and accrual bases of accounting, handling petty cash, banking procedures, payroll, work sheets, balance sheets, and income statements.

1314 ABC Shorthand I — 72 — 4

This course provides an alternative shorthand using letters of the alphabet rather than shorthand symbols. It may be elected by students planning to complete the technical certificate or continuing education students wishing to learn rapid writing skills in a short time.

1315 Shorthand I — 72 — 4

An introductory course in shorthand with special emphasis upon basic theory, brief forms and speed in reading from plate notes. Dictation is introduced with emphasis placed on writing and transcription techniques.

1316 Technical Communications — 48 — 4

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1320 Business Law I — 36 — 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punish-

ment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

1321 Legal Office Procedures 72 4

This course is designed to provide a basic understanding of the secretarial and bookkeeping duties and responsibilities as pertinent to the legal profession. It includes legal correspondence and records, client files, filing, financial administration, correct contact procedures with clients, courts, and professional agencies. It also includes considerations for desirable personality traits, interpersonal relationships, and attitudes within the law office.

1322 Typewriting II 72 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of business letters, forms, manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building.

1323 Mathematics of Finance 60 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

1324 ABC Shorthand II 72 4

A continuation of abc Shorthand I emphasizing greater speed and accuracy.

1325 Shorthand II 72 4

This course places emphasis in writing and transcribing dictated subject matter and the development of skill in formulating new outlines in accordance with the basic principles of shorthand. Extension of transcription techniques and practice as well as the essentials of good English principles are stressed.

1330 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

1331 Legal Office Communications 36 3

Communications skills development directed toward the legal office are studied. Oral and written communications directed specifically toward the legal profession are emphasized.

1332 Typewriting III — Legal 72 3

This course is designed to improve production typewriting ability in legal situations. Problem and production techniques will include complex tabulation, statistical reports, rough drafts, manuscripts and legal documents.

COURSE DESCRIPTIONS Hours Credits

1333 Business Law II 36 3

This course is a continuation of Business Law I with emphasis on topics which include bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.

1334 ABC Shorthand III — Legal 72 4

A continuation of abc Shorthand I and II stressing greater speed and accuracy with emphasis on legal materials.

1335 Shorthand III — Legal 72 4

This course is designed to develop student competence in specialized legal dictation and transcription of legal correspondence, forms and documents with emphasis on the student learning to construct shorthand outlines of legal terms.

1336 Office Calculating Machines 72 4

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

1340 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

1341 Legal Office Practice 60 5

This is designed as a finishing course emphasizing the skills, techniques and attitudes businessmen desire in office workers, including review instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job. Laboratory experience in applying skills and knowledges gained in previous business courses will be provided in handling legal forms and procedures common to a legal office. Included will be research assignments, maintaining legal calendars and files.

1342 Typewriting IV (Legal) 72 3

This course is designed to improve production typewriting ability in legal situations. Problem and production techniques will include complex tabulation, statistical reports, rough drafts, manuscripts and legal documents.

1343 Field Project and/or Case Study 60 5

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1344 ABC Shorthand IV (Legal) 72 4

A continuation of ABC Shorthand I, II, and III stressing greater speed and accuracy with emphasis on legal materials.

1345 Shorthand IV (Legal) 72 4

This course is designed to develop student competence in specialized legal dictation and transcription of legal correspondence, forms and documents with emphasis on the student learning to construct shorthand outlines of legal terms.

SECRETARIAL — MEDICAL

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
1410	Medical Linguistics I	48	2
1411	Personal Development	36	3
1412	Typewriting I	72	3
1413	Medical Office Bookkeeping	48	3
1414	Technical Communications	48	4
		252	15

Career Opportunities: Medical Office Clerk, Medical Office Receptionist.

SECOND QUARTER			
1420	Office Calculating Machines	48	3
1421	Medical Office Procedures	60	4
1422	Typewriting II	72	3
1423	Mathematics of Finance	60	5
		240	15

Career Opportunities: Medical Insurance Clerk, Medical Office Typist.

THIRD QUARTER			
1430	Applied Psychology	36	3
1431	Medical Filing and Indexing	36	3
1432	Machine Transcription, Medical I	72	3
1433	Medical Office Management	48	3
1434	Medical Office Communications	48	4
		240	16

Career Opportunities: Medical Secretary, Clinical Office Supervisor.

Total Contact Hours: 732
Total Credits: 46

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the medical profession.

1410 Medical Linguistics I — 48 — 2

This course presents the ethics of medicine, professional conduct and words from Greek and Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of medical words through the Greek and Latin parts, correct spelling of these terms, and the intelligent use of the medical dictionary.

1411 Personal Development — 36 — 3

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen field.

SECRETARIAL — MEDICAL

COURSE DESCRIPTIONS — Hours — Credits

1412 Typewriting I — 72 — 3

This course is designed for beginners in typewriting. It covers the development of the fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

1413 Medical Office Bookkeeping — 48 — 3

A course designed to introduce the basic principles of bookkeeping as utilized primarily in a medical office setting. This course includes the principles of debit and credit, double entry bookkeeping, use of journals (particularly combined cost journal) and analyzing transactions. Also included are the use of ledgers, posting procedures, cash basis of accounting, handling petty cash, banking procedures, payroll, depreciation of accounts, balance sheets, work sheets, and income statements.

1414 Technical Communications — 60 — 5

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1420 Office Calculating Machines — 48 — 3

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

1421 Medical Office Procedures — 60 — 4

This course is designed to provide a basic understanding of the secretarial and bookkeeping duties and responsibilities as pertinent to the medical offices and health care agencies. It includes medical correspondence and records, insurance forms, case histories of patients, filing, financial administration, correct contact procedures with patients, hospitals, and professional agencies. It also includes considerations for desirable personality traits, interpersonal relationships, and attitudes within the medical office.

1422 Typewriting II — 72 — 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of business letters, forms, manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building.

1423 Mathematics of Finance — 60 — 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

1430 Applied Psychology — 36 — 3

This course presents a study of psychological behavior in medical relationships. Information concerning human needs and behavior in health and illness is designed to improve individual attitudes, productivity and personal morale in working situations.

COURSE DESCRIPTIONS	Hours	Credits
1431 Medical Filing & Indexing	36	3

This course is designed as a study of medical terminology, coding systems and methods of filing and indexing medical information.

1432 Machine Transcription, Medical I	72	3

This course is designed to provide a basic understanding of the techniques of dictation and transcription used by the medical assistant. Transcription in the following fields of medicine is studied: internal medicine, surgery, obstetrics, gynecology, pediatrics, orthopedics, otorhinolaryngology, urology, ophthalmology, neurology, psychiatry and dermatology.

COURSE DESCRIPTIONS	Hours	Credits
1433 Medical Office Management	48	3

This course supplies the background for organization and management of a physician's office and an in-depth study of governmental types of health insurance coverage.

1434 Medical Office Communications	48	4

Communications skills development directed toward the medical office are studied. Human relations necessary in medical office communications are emphasized.

COMMERCIAL ART TECHNOLOGY

The objective of this curriculum is to prepare men and women for employment as commercial artists in many types of businesses. They may be employed preparing art designs or illustrations for advertisers; television commercials, cartoons, industrial and advertising films; they may be involved in fashion illustration, package design, wallpaper and textile design, display, poster, brochures and other publications, direct mail advertising and window display for retail department stores. Many such artists are self-employed; others work for manufacturers, department stores, advertising agencies, television stations, sign shops and newspapers.

The commercial artist produces art for commerce, and the need for competent people grows with business and industry. He is an interpreter of ideas and is capable of translating the thought of the client, or a business associate, into a graphic statement.

Prior art training or experience is desirable, but not necessary, as long as the applicant displays evidence of art ability.

To determine which regional institutes offer this program, please refer to either the program location chart in the catalog, or to the cover of the program brochure.

COMMERCIAL ART TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
1810	Composition and Design I	90	4
1811	Illustration I	90	4
1812	Basic Drawing I	90	4
1813	Art Careers Orientation	40	3
		310	15

SECOND QUARTER			
1820	Composition and Design II	90	4
1821	Illustration II	90	4
1822	Basic Drawing II	90	4
1823	Communications Development	40	3
		310	15

THIRD QUARTER			
1830	Typography	90	4
1831	Illustration III	90	4
1832	Photography I	120	5
1833	Science of Art Materials	90	4
1834	Human Relations	40	3
		430	20

Career Opportunities: Typography Designer, Technical Illustrator.

FOURTH QUARTER		Hours	Credits
1840	Layout Design I	90	4
1841	Illustration IV	90	4
1842	Photography II	120	5
1843	Life Drawing I	90	4
1844	Math for Artists	40	3
		430	20

Career Opportunities: Color Coordinator, Photo Retoucher

FIFTH QUARTER			
1850	Layout Design II	90	4
1851	Illustration V	90	4
1852	Photography III	120	5
1853	Life Drawing II	90	4
1854	Business Communications	40	3
		430	20

Career Opportunities: Industrial Illustrator, Airbrush Artist.

SIXTH QUARTER			
1860	Keylining I	90	4
1861	TV Art Design	90	4
1862	Psychology	40	3
1863	Oral Presentations	40	3
		260	14

Career Opportunities: Keyline Paste-up Artist, Ad Layout Artist.

SEVENTH QUARTER			
1870	Keylining II	90	4
1871	TV and AV Design	90	4
1872	Seminar in Occupations	40	3
	Restricted Art Elective°	90	4
		310	15

Career Opportunities: General Illustrator, Layout Designer, Keyline Artist.

EIGHTH QUARTER			
1880	Field Project and/or Survey	180	8
	Restricted Art Elective°	90	4
		270	12

Career Opportunities: Commercial Art Technician.

Total Contact Hours: 2,750
Total Credit: 131

°Restricted electives in Art:

1881	Media and Occupational Illustrations	90	4
1882	Sequential AV and TV Art	90	4
1883	Specialized Layout and Keyline	90	4

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward commercial art technology.

1810 Composition and Design I 90 4

Deals with two-dimensional concept and shapes. Introduces the student to flat pattern design shapes. Gives him instruction in the use and mixing of color, with the varied techniques of color. Makes him aware of texture and value.

1811 Illustration I 90 4

An introductory course in media, water color, tempera, polymer and inks.

1812 Basic Drawing I 90 4

The student will develop basic drawing skills with the pencil, charcoal, water, crayon, etc., and will deal with the quality of line, the mass of volume, and control of values.

1813 Art Careers Orientation 40 3

Art pursuits are investigated in the general area of study of the student's interest and enrollment. Study includes research of specific jobs or field opportunities. Activities include interviews, collections of art careers information, and field observation.

1820 Composition and Design II 90 4

The class will deal with the three-dimensional concepts of the visual image, color optics and color dynamics, with the illusion of 3D and the actuality of the 3D form and the use, limitations and physical manufacture of 3D forms for commercial use.

1821 Illustration II 90 4

There will be concentration in aqua-media with exploration of various techniques with the brush to show the value and advantage in using each technique and medium.

1822 Basic Drawing II 90 4

Basic Drawing II provides further experience in the use of felt pens, chalks, conte crayon, pen and ink with the emphasis in the quality of descriptive sketching. It will show the difference between the sketch used as finished art and the sketch used as a layout for the illustration.

1823 Communication Skills Development 40 3

On an individualized self-paced basis, each student will cover written grammar, and vocabulary development oriented toward his occupation.

1830 Typography 90 4

Introduction to type, what it is, sizes, different methods, spacing, line count and lab experience in lettering type faces for layout.

1831 Illustration III 90 4

Concentrated work in black and white illustration with techniques in pen and ink, dry brush, chalks, designers colors, pencil with the use of mechanical materials. Some work in line-converted photos and their use. The course will also show the use of overlays in using a second, or more, color to black and white ad work.

1832 Photography I 120 5

A basic preparatory course in photography fundamentals. Content covers the theory and practical applications of basic camera types. The purpose of the course is to teach its relationship to the commercial field of art and illustrative techniques.

1833 Science of Art Materials 90 4

The student will study the physical properties and make-up of pigments, binders and media. The difference between media such as watercolor, gouache and polymer will be studied. The chemistry and physical makeup of different inks and their particular use will be related to the various forms of art supports and the most common types of paper used for reproduction printing. Areas of concern are supports, media, equipment and supplies.

1834 Human Relations 40 3

This course is a survey of social sciences that help explain human behavior and motivation. Appropriate materials from psychology and social problems. Such information is designed to help individuals better understand themselves and society.

1840 Layout Design I 90 4

This course deals with the basic concepts of layout, how they relate to finished art and the use of various media and techniques of layout. Familiarization with the materials and layout techniques as they relate to the various advertising media are explored.

1841 Illustration IV 90 4

Techniques and handling of airbrush rendering and photo retouch are covered. The student will have experiences in both black and white and color with extensive use of masking technique and supplementary brush work. Combined media will be used.

1842 Photography II 120 5

The study of photography as a tool for sequential story telling.

1843 Life Drawing I 90 4

The anatomical study of the undraped figure, its uses in the layout form and the finished art version are included. Life Drawing I deals with the natural movements and positions of the muscles and skeleton and how each relates to the other. The study of line figure versus the shaped figure is covered.

1844 Math for Artists 40 3

This course stresses the fundamental operations through job estimating, through diagnostic tests. Part or all may be assigned to Skills Advancement.

1850 Layout Design II 90 4

The emphasis will be upon the comprehensive layout and its relation to the finished printed product. All the efforts will be directed toward developing the student's capacity for neat, well-designed layouts.

1851 Illustration V 90 4

The fifth course in illustration will be directed toward student interest in specific media. It will afford an opportunity to develop a proficiency in one area or possibly two.

1852 Photography III 120 5

Photo procedures and their relations to the reproductive processes and product photos.

1853 Life Drawing II 90 4

The draped figure versus the undraped figure. The action of the figure upon clothing and the use of figure sketching to finished sketch and illustration.

1854 Business Communications 40 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, prospectuses, reports, and summaries of conferences. Emphasis is

on business writing which is informative, concise and persuasive, and are common in the Commercial Art field.

1860 Keylining I 90 4

Analysis of requirements and practical lab work in the preparation of art and mechanical operations for camera copy. A thorough indoctrination in methods and materials. A specific effort will be made to familiarize the student with type selection, its relation to visual impact of final product.

1861 TV Art Design 90 4

The student will study and execute visual art that is to be used for TV as direct art, slides, or video tape. Techniques, field size, value and hue control and use of overlays will be studied. Both advertising and entertainment art will be executed to demonstrate the scope of TV oriented visuals. Story boards will be executed for all course projects.

1862 Psychology 40 3

A study of psychological principles and methods as applied to art layout and color. Emphasis is given to student demonstrations and experiments designed to show human behavior when perception of symbols, patterns and colors occur.

1863 Oral Presentations 40 3

This course presents intensive training in art product presentations. Training helps prepare students to present their product to prospective clients.

1870 Keylining II 90 4

Keylining II will concentrate on the practical preparation of keylines in relation to the printer, agency and client. Classroom discussion will deal with practical consideration of keylining. The responsibility of the artist and the printer as to what is to be done by whom and which can best do it economically. Laboratory work will be concerned with producing accurate keylines ready for camera.

1871 TV and AV Design 90 4

Concentration is placed on visual aids with further study of techniques and art forms used as visual aids by educational institutions, etc. The student will not only produce art but will execute projects in finished forms as film strips, slide films and TV tapes.

1872 Seminars in Occupations 40 3

The employment market, job interviews, portfolios and resumé preparations are examined by the student with placement services provided.

1880 Field Project and/or Survey 180 8

Occupational experience is provided for the student in the environment of his specific skills.

1881 Media and Occupational Illustrations 90 4

Individual projects are assigned to provide experience of assembling a complete project. Enphasis will be coordinated with the field project.

1882 Sequential AV and TV Art 90 4

Individual projects are assigned to provide experience of assembling a complete project. Emphasis will be coordinated with the field project.

1883 Specialized Layout and Keyline 90 4

Individual projects are assigned to provide experience of assembling a complete project. Emphasis will be coordinated with the field project related to specialized layout and keyline work.

COMMERCIAL AND INDUSTRIAL PHOTOGRAPHY

Photography is used for an ever increasing variety of tasks, from micro-photography for computer use to plates for electronic circuits. At the same time, the use of the visual in advertising, TV, industrial training and education is expanding and increasing the demand for commercial and industrial photography.

This program emphasizes technical skills, from the camera to the darkroom. As the student becomes comfortable with his skill, composition and technique are stressed to insure capability of producing materials meeting commercial and industrial standards.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog or to the cover of the program brochure.

COMMERCIAL AND INDUSTRIAL PHOTOGRAPHY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
1610	Photography I	120	6
1611	Photo Career Orientation	10	2
1612	Communications Skills Development	60	3
1613	Technical Mathematics I	80	5
		270	16

SECOND QUARTER			
1620	Photography II	120	6
1621	Darkroom Techniques	95	4
1622	Composition and Design I	95	4
1623	Human Relations in Photography	30	2
		340	16

THIRD QUARTER			
1630	Photography III	120	6
1631	Special Darkroom Techniques	95	4
1632	Science of Photo Materials	40	3
1633	Business Communications for Photographers	40	3
		295	16

Career Opportunities: Assistant Darkroom Technician, Assistant Cameraman.

FOURTH QUARTER			
1640	Studio Lighting and Setup Techniques	95	4
1641	Illustration IV (Retouch)	95	4
1642	Industrial and Commercial Photo Techniques	115	5
1643	Oral Presentations	40	3
		315	16

Career Opportunities: Studio Lighting Assistant.

FIFTH QUARTER		Hours	Credits
1650	Production Film and Print Processing	95	4
1651	Specialized Commercial Photography	95	4
1652	Custom Print Production	95	4
1653	Portrait Photography	95	4
		380	16

Career Opportunities: Industrial Cameraman, Commercial Cameraman.

SIXTH QUARTER			
1660	Camera and Studio-Color	95	4
1661	Color Film and Print Process	115	5
	Restricted Photography Electives°	115	5
1665	Field Project and/or Survey	95	4
		420	18

Career Opportunities: Darkroom Technician, Commercial Photographer, Industrial Photographer.

SEVENTH QUARTER			
1670	Field Project and/or Survey II	120	6
1671	Seminars in Occupation	30	2
	Restricted Photography Electives°	115	5
	Related Course Elective	30	2
		295	15

Career Opportunities: Commercial Photographic Technician, Industrial Photographic Technician.

Total Contact Hours: 2,345
Total Credit Hours: 113

°Restricted Photography Electives:

1662	Special Effects in Color	115	5
1663	Color Correction	115	5
1664	Mural Enlargements	115	5

COURSE DESCRIPTIONS

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward commercial and industrial photography.

1613 Technical Mathematics 80 5

On a self-paced format the student will cover the concepts of percentage, ratio, proportion, measurement, powers and roots. The student will continue into algebraic concepts introduced along with signed numbers and basic geometric and trigonometric relationships.

1612 Communication Skills Development 60 3

On an individualized self-paced basis, each student will cover written grammar and vocabulary development oriented toward his occupation.

1643 Occupational Communications 40 3

Communication skills needed for specific occupations are covered with emphasis on the skill area most needed for that occupational skill.

1610 Photography I 120 6

This basic preparatory course in photographic fundamentals covers the theory and practical applications of basic camera types. Picture taking, exposure determination, processing, and introduction to the media of the field are introduced.

1611 Photo Careers Orientation 10 2

Career pursuits are investigated in the general area of study of the student's interests and enrollment and includes interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

1620 Photography II 120 6

This is a course in sequential photography concerned with the use of the photo as an illustrative tool for story telling.

1621 Darkroom Techniques 95 4

The techniques of film processing, print processing is the main concern of this course. Special emphasis will be placed upon utilization of proper developers in film processing and the ability to produce clean correctly developed negatives. The use of enlargers, correct filter selection, and dodging or burning of prints and correct development of prints will also be of prime concern. Special emphasis will be placed upon producing a print for specific uses such as salon prints, prints for direct reproduction and prints for photo retouching.

1622 Composition and Design I 95 4

The student studies the basic elements of two-dimensional, flat pattern design and the use of these basic elements in creative work as related to composition and design.

1623 Human Relations in Photography 30 2

In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

1630 Photography III 120 6

Photography procedures in product photography and their relationship to the reproductive process.

1631 Special Darkroom Techniques 95 4

A variety of films and photographic papers and their processes are experienced with emphasis on lithographic films and techniques.

1632 Science of Photo Materials 40 3

The student will study the different types of films, papers, chemicals, filters and cameras used in photography. The use and purpose of all photo materials and equipment will be studied. The advantages and disadvantages of different papers and films will be studied.

1633 Business Communications for Photographers 40 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive; and relates to occupational skill in photography.

COURSE DESCRIPTIONS Hours Credits

1640 Studio Lighting and Set-up Techniques 95 4

This course is designed to familiarize and train the student in studio lighting and set-up techniques. The use of lighting systems such as Color-Tran, iodized quartz lights and 3200 kelvin lamps will be studied. Creation of special effects in lighting will be studied. Techniques in set-up will include such things as infinite backgrounds, scrims, and backdrops.

1641 Illustration IV (Retouch) 95 4

This course covers techniques and handling of airbrush rendering and photo retouch. Students will have experiences in both black-and-white and color. Extensive use of masking techniques and supplementary brush work and use of combined media is included.

1642 Industrial and Commercial Photo Techniques 115 5

This course is designed to teach the techniques needed for industrial and commercial photography. Special lighting techniques such as photography with existing light, electronic flash and slave lighting, painting with light, set up lighting, and use of reflected light in business, outdoors and in manufacturing plants will be studied. The photographic techniques of specialized photography such as wide angle, anamorphic lens shots, fish eye photography, action shots and double exposure will also be studied. The student will receive experience in taking crowd and group shots as used in PR photography.

1643 Oral Presentations 40 3

Communication skills needed for specific occupations are covered with emphasis on the skill area most needed for that occupational skill.

1650 Production Film and Print Processing 95 4

This course is devoted to the student acquiring experience in processing techniques needed for quantity production of roll and cut film of all format sizes. The use of various developers, replenishers, etc., used in film processing will be studied. The student will acquire skills and knowledge of technique in quantity printing with both contact printer and enlarger needed. Gang development of prints will be stressed as a darkroom technique.

1651 Specialized Commercial Photography 95 4

This course is designed to give the student detailed, broad knowledge and experience in a specific area of his choice. This course is coordinated with other courses so that, whenever possible, he may utilize his skills and knowledge by on-the-job experience in the business world. Areas of particular interest are architectural, journalistic, aerial portrait and industrial photography.

1652 Custom Print Production 95 4

Darkroom techniques in quality printing of salon prints, mural prints, portraits, prints for direct use for reproduction and photo retouching will be studied and executed in darkroom projects.

1653 Portrait Photography 95 4

Various aspects of portrait photography will be studied including the use of lighting and props. Various types of portraits, such as posed shots, action shots, informal, family groups and childrens portraits, will be studied through project execution.

1660 Camera and Studio-Color 95 4

The student will study and develop competency in lighting for color with particular emphasis upon temperature control as it is effected by color balance. Special techniques such as posturized color effects in lighting and use of colored spots will be studied. Sixth Quarter students only.

COURSE DESCRIPTIONS	Hours	Credits

1661 Color Film and Print Process 115 5

The student will study and develop skills in the processing of color films (both color negatives and transparencies) and type "C" color prints. Special interest will be focused upon temperature control and cyclic time for processing. Experience in color balance control will be of prime concern for printing. Both contact and enlarging work will be executed for this course. Open only to Sixth Quarter students (or proven professional ability up to this level).

1662 Special Effects in Color 115 5

Individual projects with an emphasis in the specific skill are arranged. Students complete projects that simulate occupational area. The project is coordinated with the field project.

1663 Color Correction 115 5

Individual projects with an emphasis in the specific skill are arranged. Students complete projects that simulate occupational area. The project is coordinated with the field project.

1664 Mural Enlargements 115 5

Individual projects with an emphasis in the specific skill are arranged. Students complete projects that simulate occupational area. The project is coordinated with the field project.

COURSE DESCRIPTIONS	Hours	Credits

1665 Field Project and/or Survey 95 4

Occupational experience is arranged for the student in the specific area of training. Continued guidance occurs throughout the field project.

1670 Field Project and/or Survey 120 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1671 Seminars in Occupation 30 2

In this course which is designed to equip the student for a smooth transfer from training of the world of work, resource persons representing industrial and business organizations discuss locating jobs, job applications and interviews, preparation of credentials, human relations, employer-employee expectations, personal grooming and appearance, labor laws, union membership, taxes, insurance, liability, trade and professional associations and organization's occupational journals, further training for job upgrading. Enrollment in this seminar is recommended during the last quarter of a student's study.

INTERIOR DESIGN TECHNOLOGY

The creative work of interior designers and decorators is being used more and more by a variety of firms and businesses.

Interior design technicians plan the arrangement of interior space and coordinate the selection of furniture, draperies, floor coverings, and interior accessories.

They may work on the interiors of residences, offices, commercial buildings, ships or aircraft. Some interior design technicians may work on stage sets for motion picture or television studios; they may design furniture and accessories to be used in interiors, and others may redesign interiors of old structures.

The graduate of this program will be trained to work as an interior design assistant or trainee in interior decoration firms, as a sales consultant for furniture stores and home furnishings departments, as a buyer-trainee for home furnishings departments or as a painting and decorating advisor.

Some hotel and restaurant chains have full-time interior design personnel. Interior designers and decorators also are employed by paint and decorating contractors, architects, floor coverings firms, industrial design firms, office furniture stores and textile manufacturers. Both men and women will find rewarding careers in this area.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

INTERIOR DESIGN TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

	FIRST QUARTER	Hours	Credits
2010	Composition and Design I	60	4
2011	Color Theory	72	4
2012	History of Art I	36	3
2014	Technical Communication I	36	2
2022	Fundamentals of Interior Design I	48	3
		252	16

	SECOND QUARTER		
2013	Fundamentals of Structural Design I	72	4
2020	Composition and Design II	60	4
2024	Technical Communication II	36	2
2033	Human Relations	48	3
2062	Salesmanship	36	3
		252	16

Career Opportunities: Interior Decorator's Assistant

	THIRD QUARTER		
2023	Fundamentals of Structural Design II	48	3
2030	Occupational Communications	36	2
2032	Fundamentals of Interior Design II	48	3
2034	Mathematics of Finance	60	5
2052	Retailing	36	3
		228	16

Career Opportunities: Textile Design Assistant

	FOURTH QUARTER		
2021	Textiles I	48	3
2040	Consumer Education for Interiors	48	3
2041	Furniture Selection and Arrangement I	72	4
2043	Psychology	36	3
2044	Consumer Economics	36	3
		240	16

Career Opportunities: Window Dresser, Interior Decorator

	FIFTH QUARTER		
2031	Textiles II	72	4
2050	Applied Interior Design I	96	5
2051	Display I	84	5
2053	Furniture Selection and Arrangement II	48	3
		300	17

Career Opportunities: Interior Salesman, Showroom Designer

	SIXTH QUARTER		
2042	Advanced Textiles	72	4
2060	Applied Interior Design II	96	5
2061	Display II	60	3
	Restricted Elective, Graphics & Media	36	3
		264	15

Career Opportunities: Display Designer, Interior Designer

Total Contact Hours: 1,536
Total Credits: 96

COURSE DESCRIPTIONS — **Hours** — **Credits**

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward interior design technology.

2014 Technical Communications I — **36** — **2**

On an individualized, self-paced program, the student will cover writing, reading, and speaking skills oriented toward occupational needs.

2024 Technical Communications II — **36** — **2**

On a self-paced basis effective technical writing is emphasized with logical development of information presented for clearly expressing occupational problems, procedures and solutions.

2030 Occupational Communications 36 2

Communication skills needed for specific occupations are covered with emphasis on the skill area most needed for that occupational skill.

2010 Composition and Design I 60 4

The student studies the basic elements of two-dimensional design and the use of these basic elements in creative work as related to the field of interior design. The principles of drawing flat elevations are studied.

2011 Color Theory 72 4

This course includes an intensive exploration of color — theory, expression, range, key and psychology — as related to the individual and family with respect to living with color. Practical application of problems in the use of color is covered.

2012 History of Art I 36 3

The student studies art from prehistoric times through Greek and Roman times. A view of the art of different eras in light of cultural backgrounds and interrelation of major periods of art history is presented. A study of the major changes reflected in the art of the times is included.

2013 Fundamentals of Structural Design I 72 4

The fundamentals of drafting and use of drafting equipment as applied to interior design is studied. Lettering, dimensioning and execution of floor plans are covered. A plan for a client is developed by the individual student. The development of exterior styles is studied.

2020 Composition and Design II 60 4

Three-dimensional concepts as related to perspective drawings are covered. Students learn to develop renderings of actual rooms for realistic presentation to clients.

2021 Textiles I 48 3

The student studies textile fibers, weaves, finishes and dyeing processes. From this basic information he learns to identify these qualities in actual fabric samples.

2022 Fundamentals of Interior Design I 48 3

The student learns the application of the elements and principles of design, as related to interiors. Window treatments, lighting, accessories, and the art of picture framing and hanging are also covered.

2023 Fundamentals of Structural Design II 72 4

Students develop specifications, door and window schedules of elevations for their own floor plans. Building materials for floors and walls are covered.

2031 Textiles II 48 3

This course places emphasis on textiles as they relate to the field of interior decoration. Physical properties and characteristics of carpets, wall coverings, upholstery and draperies are covered.

2032 Fundamentals of Interior Design II 48 3

A concentration on furniture styles and their development.

2033 Human Relations 48 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

2034 Mathematics of Finance 60 5

This course stresses the fundamental operations and their applications to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

COURSE DESCRIPTIONS Hours Credits

2040 Consumer Education for Interiors 48 3

The general factors influencing quality buying for interiors are studied. Materials and trends are examined in relation to needs of consumers.

2041 Furniture Selection and Arrangement I 72 4

The students study the determination of quality in the selection of furniture, types of woods and the principles of furniture arrangement.

2042 Advanced Textiles 72 4

Practical problems are given on the proper method of estimating and installing carpet, drapery and wall coverings.

2043 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

2044 Consumer Economics 36 3

Study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems are included in this course.

2050 Applied Interior Design I 96 5

Analysis of each room's functional and special needs, with attention given to the arrangement of furniture and fixtures in these rooms.

2051 Display I 84 5

Students study the basic principles governing displays and the special techniques and equipment required in carrying out display work.

2052 Retailing 36 3

Topics covered are business location, building fixtures and equipment, store layout, retail management organization, purchasing procedures, merchandise discounts and ordering policies, product inventory control systems, planning the merchandise budget, receiving, checking and marketing merchandise, retail store promotions, pricing, retail store services and trends in marketing.

2053 Furniture Selection and Arrangement II 48 3

Students receive practical application in analyzing existing conditions of interior or areas. They work with basic floor plans and assigned furnishings to be arranged with advancement to floor plans of various types.

2060 Applied Interior Design II 96 5

Students carry out actual design projects in their entirety with complete description of the background of the client. This includes a formal presentation, defense of design presented and the responsibility for meeting a completion date.

2061 Display II 60 3

A continuation of Display I (2051) with emphasis placed on the practical application of the principles and techniques learned for creative display work.

2062 Salesmanship 36 3

This is a survey course of sales and the techniques of selling a service. Equal stress is placed on selling the product as well as the service. The course covers all phases of the sales including approach, demonstration, close and departure.

PRINTING TECHNOLOGY

Printing is the major means of communication in this information directed society, and is a major industry. The demand is high for trained printers throughout the country.

The complexity and high mechanization of printing equipment today makes training in modern methods and techniques extremely important. A modern printing laboratory includes offset presses, letterpress, varityper, folders, headliner, stripping tables, platemaking equipment, paper drills, power paper cutter, horizontal camera, and darkroom equipment.

The printing industry provides employment for a great number of people in a wide variety of specialties. Printing craftsmen usually specialize in one area of the printing operation such as type composition, photography, platemaking, presswork, or binding.

Opportunities for employment are found in printing and publishing plants, government agencies, manufacturers of paper products, and in many large corporations, banks, insurance companies, colleges, and travel organizations which have their own print shops.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

PRINTING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
2210	Typography and Typesetting	48	4
2211	Layout and Camera	48	4
2212	Stripping and Platemaking	48	4
2213	Printing I	96	6
		240	18
SECOND QUARTER			
2220	Typesetting and Composition	36	3
2221	Line and Halftone Negative	36	3
2222	Proofing, Stripping and Platemaking	36	3
2223	Printing II	96	6
2224	Printing Estimating	36	3
		240	18

Career Opportunities: Process Camera Operator, Stripper Trainee, Transfer Operator.

THIRD QUARTER			
2230	Advanced Typography and Typesetting	36	3
2231	Line and Halftone — Color	36	3
2232	Proofing and Platemaking — Color	36	3
2233	Production Printing I	96	6
2234	Typewriting	36	3
		240	18

Career Opportunities: Stripper, Platemaker, Composer.

FOURTH QUARTER		Hours	Credits
2240	Negative and Plate Makeready	36	3
2241	Production Printing II	96	6
2242	Press Troubleshooting	36	3
2243	Estimating and Business Practices	36	3
2244	Bindery Practices	24	2
		228	17

Career Opportunities: Platen Pressmen, Offset Reproduction operator, Photo Engraver.

FIFTH QUARTER			
2251	Special Problems in Printing	120	8
2252	Manufacturing, Organization and Management	36	3
2253	Supervisory Techniques I	36	3
2254	Communications Skills	36	3
	Elective (Electronics or Accounting)	36	3
		264	20

Career Opportunities: Plate Finisher, Embosser, Web-Pressman Trainee.

SIXTH QUARTER			
2261	Field Case and Project Study	120	8
2262	Production Controls	48	4
2263	Supervisory Techniques II	36	3
2264	Labor Management	36	3
2265	Human Relations	36	3
		286	21

Career Opportunities: Printing Technician, Lithographer, Printing Supervisor.

Total Contact Hours: 1,488
Total Credits: 112

COURSE DESCRIPTIONS

Skills Advancement — Hours: — Credits: —

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward printing technology.

2210 Typography and Typesetting — Hours: 48 — Credits: 4

Type, what it is, sizes, different methods, spacing, and line count are taught and laboratory experiences in lettering type faces for layout are provided. Spacing and selection of type are begun.

2211 Layout and Camera — Hours: 48 — Credits: 4

This course provides instruction in the operation of process cameras. Line photography techniques are emphasized. Film developing and darkroom techniques and procedures are practiced. Preparation of mechanical art for camera copy is also covered.

2212 Stripping and Platemaking — Hours: 48 — Credits: 4

This course covers laying-out and stripping the flat for black and white reproduction. Instruction and experience are provided

in using equipment and supplies in stripping in negatives. Accuracy and placement of negatives in goldenrod sheets are stressed. Finished products are used in completion of letterpress and off-set platemaking.

2213 Printing I 96 6

The student is introduced to common small press duplicators. Work experience is provided for single sheet, black and white copy. Emphasis is placed on layout to finished product skills.

2220 Typesetting and Composition 36 3

This laboratory course includes experience, instruction and practice for reproduction with varityper, headliner, hand-set type, transfer lettering, and phototype.

2221 Line and Halftone Negative 36 3

This course requires experience in line negative work. Students learn methods and techniques of shooting copy which contain a graduation of tone, understanding densitometry types of screens and films in producing halftone negatives.

2222 Proofing, Stripping and Platemaking 36 3

Accuracy is stressed as registration and stripping of multiple negative occurs. Double or triple-burn platemaking gives the student experience in multiple imagery.

2223 Printing II 96 6

The student begins his experience with production offset presses, with letterpress and automated duplicators. Each student selects a job experience that demonstrates techniques to complete a finished product.

2224 Printing Estimating 36 3

The course consists primarily of estimating each individual task of a printing job and putting it all together to come up with the entire cost of the job. The curriculum also consists of requests for estimates for jobs and of estimate sheets for the customers. Such items as paper cost, typesetting costs, press costs and bindery costs are part of the course.

2230 Advanced Typography and Typesetting 36 3

This course requires a student to prepare a complete layout, including balance, design, appropriate type style, use of color and to prepare for the color separation camera work.

2231 Line and Halftone — Color 36 3

The student is prepared to make multiple plates with exact register for proportion for multi-color plates. The use of special effects, screens and rubylith are experienced.

2232 Proofing and Platemaking — Color 36 3

Deep etch and multimetal plates are used in preparing for color production. Proofing is given special emphasis to insure accuracy.

2233 Production Printing I 96 6

Press makeready and cleaning between color runs are emphasized. The student begins to operate the press as he would in a job assignment.

2234 Typewriting 36 3

Individual placement in typing will advance the student in touch typewriting and its application, forms, letters, manuscripts and tabulation are included with more advanced students receiving special development.

2240 Negative and Plate Makeready 36 3

Accuracy and logical sequences are emphasized to provide experience in preparing job orders.

2241 Production Printing II 96 6

The student experiences full production runs using the larger presses of the printing laboratory.

2242 Press Troubleshooting 36 3

This course covers techniques of spotting malfunctionings and quickly correcting them to insure continued press runs.

2243 Estimating and Business Practices 36 3

This is a continuation of 2224 with emphasis on cost accounting procedures and the use of Franklin Catalogs for pricing letterpress and offset jobs; for preparation and use of markup summaries, and for using estimator's worksheet and quotation forms. They are also introduced to volume buying of paper and stock control.

2244 Bindery Practices 24 2

This course is concerned with the handling of the finished printed product. Operations covered are inspection, collating, inserting, trimming, padding, stitching, folding and punching. Instruction is also given in the operation of the equipment involved.

2251 Special Problems in Printing 120 8

The student is assigned a number of activities and given a number of responsibilities unique to the printing field. These range from supervision and directing groups of workers under instructors' direction to surveys of research projects in areas of student deficiencies.

2252 Manufacturing, Organization and Management 36 3

An in-depth study oriented to the first-line supervisor and other management personnel who are interested in the interrelationships of the various departmental functions and the overall management problems encountered in a manufacturing organization. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organizational structure. Also reviewed are manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems.

2253 Supervisory Techniques I 36 3

This course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducting new employees, and evaluation of employee performance.

2254 Communications Skills 36 3

The student covers written and oral communications. Preparation and presentation skills are stressed.

2261 Field Case and Project Study 120 8

Work experience in the laboratory or outside is arranged when the student operates on a variety of production job assignments.

2262 Production Controls 48 4

This course is geared primarily toward developing in the student the ability to oversee a number of operations at one time in a typical print shop. In addition, the students will become acquainted with inventory controls, ordering of equipment and vendors catalogs.

2263 Supervisory Techniques II 36 3

This course is designed to develop the necessary skills needed for effective management of people. The various topics will be developed through group discussion, case studies and in-basket situations.

2264 Labor Management 36 3

Students explore the development and application of the labor laws and practices that form the basis of modern day industrial relations. Among the topics considered are the history and development of organized labor, Federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, Federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances and arbitration.

COURSE DESCRIPTIONS Hours Credits

2265 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

There is a growing need for men and women to support and assist the professional librarian by assuming many technical and clerical responsibilities which are essential to the operation of a modern library or a school learning resource center. Because employment opportunities are favorable, the library aide may find work in the large urban metropolis or the relatively small community.

The library aide may support or assist the professional in library circulation, referencing, technical processes, audio-visual, children's services, clerical activities and other related activities.

Employment may be found with school, college, university, business and industry, governmental or public libraries as a library aide or assistant. The library resource aide curriculum is a three-quarter program leading to a technical certificate.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog or to the cover of the program brochure.

LIBRARY RESOURCE AIDE

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
2410	Library and LRC Fundamentals	80	5
2411	Typewriting I	40	3
2412	Library Forms and Records	40	3
2413	AV Equipment Operation, Use and Maintenance	80	5
		240	16

Career Opportunitites: Library Clerk.

SECOND QUARTER			
2420	Technical Services	80	5
2421	AV Materials Production	80	5
2422	Typewriting II	40	3
2423	Library Office Practices	40	3
		240	16

Career Opportunities: Audio-Visual Library Assistant.

THIRD QUARTER			
2430	Library Public Services	80	5
2431	Library Operations and Practices	40	3
2432	Field Project and/or Case Study	80	5
	Related Elective	40	3
		240	16

Career Opportunitites: Library Aide, Learning Resource Center Aide.

Total Contact Hours: 720
Total Credits: 48

LIBRARY RESOURCE AIDE

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the library resources field.

2410 Library and LRC Fundamentals — 80 — 5

This course is an introduction to all major phases of library and learning resource center operations, especially as they pertain to the role of "Library Aide." Units include library history, governmental and legislative relationships, financial structure and systems, technical and public services, library systems, organizational patterns, physical plants, public relations and media systems.

2411 Typewriting I — 40 — 3

A course for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application; including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development. Emphasis is begun on typing catalog copy.

2412 Library Forms and Records — 40 — 3

The student receives an introduction to standard forms and record keeping to include office machines, correspondence and filing as they apply to library functions. Catalog indexes and classification are introduced.

2413 AV Equipment Operation, Use and Maintenance — 80 — 5

The student will operate a variety of AV equipment and cover basic maintenance procedures for the various hardware items.

2420 Technical Services — 80 — 5

The student receives an introduction to techniques of ordering and writing acquisitions, cataloging, filing, shelving, designing and the use of card catalogs, materials handling, mending, automation, serials control, government documents and other "non-book" materials. Prerequisite: 2412.

2421 AV Materials Production — 80 — 5

The student produces a variety of AV software and prepares catalog cards for produced and commercial media.

2422 Typewriting II — 40 — 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of: business letters, forms manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building. Increased emphasis is stressed on accurate catalog copy.

2423 Library Office Practices — 40 — 3

This course emphasizes skills, techniques and attitudes Librarians and LRC Directors desire in their administrative officer.

COURSE DESCRIPTIONS	Hours	Credits

Correspondence, file organization, telephoning, personal hygiene and dress are covered. Laboratory or simulation is used to provide direct experience with possible tasks.

2430 Library Public Services 80 5

This course is an introduction to public services in library operations. Unit includes a study of services peculiar to different types of libraries (e.g. SDI systems for special libraries), hardware applications, circulation operations, information services, reference services, arrangement of materials, inter-library loan systems, personnel requirements and human relations.

COURSE DESCRIPTIONS	Hours	Credits

2431 Library Operations and Practices 40 3

The student is exposed to service demands of patrons and the operation that provides the service. This will include shelf arrangement, basic reference, etc., and the procedures to satisfy the demand quickly. Actual experience in a LRC environment will be provided.

2432 Field Project and/or Case Study 80 5

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

CHILD CARE TECHNOLOGY

Child care specialists are needed to serve as assistant teachers or to take charge of small groups under the supervision of a master teacher in day care centers, nursery schools, kindergartens, day nurseries, and programs to culturally disadvantaged young children. Students study all phases of early childhood development, handling groups of young children and parent-child interrelationships. Through observation and practice, the student develops techniques in such activities as music, art, storytelling and language development. During field experiences, the student progresses from observation to supervised student/assistant teaching and observes and becomes part of parent groups. Staff and teaching opportunities may be available in private cooperative nursery schools, day care centers, neighborhood centers, or as counselors in children's homes and institutions for exceptional children.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

CHILD CARE TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communication skills through individually prescribed units from the skills advanced studies.

In addition, the college offers short preparatory programs in Health Occupations which may provide helpful for students wishing to enroll in this program.

FIRST QUARTER		Hours	Credits
2610	Child Growth and Development	48	4
2611	Group Care of Children I	84	6
2612	First Aid and Safety	36	3
2613	Orientation to Child Care Service	36	3
		204	16

SECOND QUARTER			
2620	Nutrition Care I	36	3
2621	Group Care of Children II	168	8
2622	Team Relationships	36	3
2623	Social Concepts of Child Care	36	3
		276	17

THIRD QUARTER			
2630	Recreational and Creative Activities for Children I	36	3
2631	Group Care of Children III	168	8
2632	Personal Development	24	2
2633	Nutrition Care II	36	3
		264	16

Career Opportunities: Child Care Specialist I.

FOURTH QUARTER		Hours	Credits
2640	Child Development I	60	5
2641	Recreational and Creative Activities for Children II	36	3
2642	Menu Planning for Preschool Children	36	3
2643	Preschool Art	48	3
2644	Accounting I	48	4
		288	18

FIFTH QUARTER			
2650	Child Development II	60	5
2651	Language Arts for Children	36	3
2652	Observing and Recording Child Behavior	36	3
2653	Business Principles and Organization	36	3
		168	14

SIXTH QUARTER			
2660	Preschool Music	36	3
2661	Management Techniques	48	4
2662	Practicum in Child Care	168	5
2663	Audio-Visual Materials and Methods	60	3
		312	15

Career Opportunities: Child Care Specialist II.

Total Contact Hours: 1,452
Total Credits: 96

COURSE DESCRIPTIONS — Hours, Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

2610 Child Growth and Development 48 4

Introductory study of the physical, social, emotional and mental development of the young (preschool) child. The influence of cultural environment on development and individual differences in development are considered.

2611 Group Care of Children I 84 6

This course covers the role, duties and responsibilities of the child care center staff, the primary objectives, goals and responsibilities of a center; also, basic value structure, setting, organization and programming of child care facilities.

2612 First Aid and Safety 36 3

Basic and advanced ARC first aid are covered as well as regulations and laws for child care.

2613 Orientation to Child Care Service 36 3

An introductory course, intended to acquaint the student with the basic principles involved in teaching the younger child. The course will include working with parents and the role of the kindergarten and day care center.

2620 Nutrition Care I 36 3

A course emphasizing normal nutrition and the relation between good nutrition and general well-being. Objective of the course is to impress the student with necessity of relating knowledge gained to early childhood nutrition responsibilities.

2621 Group Care of Children II 168 8

A continuation of Group Care of Children I (2611) with emphasis on the basic principles involved in guiding the preschool child in the areas of art, music, science, mathematics, language development, and social and emotional development. 96 hours of observation of children in group care is provided.

2622 Team Relationships 36 3

Study of the professional organizations, child care laws, liscensure requirements and ethical and legal responsibilities of the child care team. Educational resources and in-service programs are presented and related to the child care team.

2623 Social Concepts of Child Care 36 3

Course designed to help the student gain an understanding of the importance of good working relationships with adults, including parents, community leaders and members and employers; in addition to establishing connections for effective use of community resources.

2630 Recreational and Creative Activities for Children I 36 3

This course covers recreational and creative activities as relates to influencing desired change in behavior in children, including analysis, of play situations appropriate to the needs and abilities of three to five year old children. Instruction and practice in teaching and supervising games for the young child are included.

2631 Group Care of Children III 168 8

A continuation of Group Care of Children II (2621).

2632 Personal Development 24 2

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen field.

2633 Nutrition Care II 36 3

A study of the specific nutritional needs of children and the effects of food on their growth and development. Emphasis will be placed on the establishment of good food habits and the methods of approaching this according to age. Menu planning for the child will also be included.

2640 Child Development I 60 5

Course designed to further the student's understanding of the physical, social, emotional, and mental development of the school age child up to preadolescence. Child guidance and behavior problems are considered. Feelings, attitudes, and values are discussed.

2641 Recreational and Creative Activities II 36 3

A continuation of Recreational and Creative Activities I (2630). Laboratory experiences include teaching and supervising group games in child care center setting.

2644 Accounting I 48 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises. Included are practical applications of the principles learned.

2642 Menu Planning for Preschool Children 36 3

A course designed with emphasis on planning and serving proper meals and snacks for preschool children. Covered also are instructions in planning meals for children requiring special diets and methods and techniques for providing group food service.

2643 PreSchool Art 48 3

This course covers art materials and methods and techniques for providing art experiences for young children. Basic art skills are developed from the vantage point of the child care staff member.

2650 Child Development II 60 5

A continuation of Child Development I (2640) with emphasis placed on study of behavioral patterns and adjustment problems of the preschool child. Laboratory experiences such as direct observation of children in various settings and working with children in groups will be provided to supplement the class work.

2651 Language Arts for Children 36 3

This course covers methods and techniques of encouraging development of language skills in preschool age children.

2652 Observing and Recording Child Behavior 36 3

Course designed to increase objectivity and proficiency in observing and interpreting childrens' behavior; in addition, to increase awareness of normative patterns of behavior. Lecture and observation facilities are provided for study of young children.

2653 Business Principles and Organization 36 3

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

2663 Audio-Visual Materials and Methods 60 3

An introductory course in audio-visual materials, methods and techniques for use in group programs. Instruction is provided on the preparation and use of audio-visual materials and equipment.

2660 Preschool Music 36 3

Intended for students who plan to work with preschool children. The course deals with basic skills needed to involve children in simple music activities. Simple instruments such as autoharp and rhythm instruments will be used. Singing, records, and other materials for group activities will be presented. Participation in musical activities with the children in the laboratory will be part of the program.

2661 Management Techniques 48 4

Principles of child care agency management. Theories and scope of the manager in relation to the personnel, business office, housekeeping, and maintenance requirements of the agency.

2662 Practicum in Child Care 168 5

Supervised experience in child care agencies designed to enrich the student through observation and participation in current practices.

CLINICAL LABORATORY TECHNOLOGY

The Clinical Laboratory Technology program provides qualified men and women with an opportunity to prepare as safe and reliable functioning members of the laboratory team; specifically to perform routine laboratory tests under supervision.

The program is designed to assure students a strong foundation for the skills unique to the supportive role in the Medical Laboratory. The curriculum is oriented around courses in Medical Laboratory techniques, but includes the academic disciplines related to the major field of study.

Standards for the laboratory assistant program have been established by the Committee on Certified Laboratory Assistants, approved by the Council on Medical Education of the American Medical Association. Students who satisfactorily complete the prescribed studies are eligible in the first year and are expected to take the certified laboratory assistants' national examination. A satisfactory score on this examination entitles the graduate to use the title "Certified Laboratory Assistant" (CLA) after his name.

The second year of the curriculum offers advanced clinical techniques and related education. The seven-quarter program leads to the degree of Associate in Applied Sciences.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

CLINICAL LABORATORY TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

FIRST QUARTER		Hours	Credits
2810	Anatomy and Physiology	48	4
2811	Fundamentals of Laboratory Techniques	120	6
2812	Medical Ethics and Personal Health	24	2
2813	Clinical Blood Bank Techniques	84	3
2814	Clinical Routine Analysis Techniques	84	3
2815	Clinical Practicum (Optional)	96	1
		456	19

Career Opportunities: Laboratory Aide.

SECOND QUARTER			
2820	Clinical Hematology Techniques	168	6
2821	Clinical Blood Bank Applications	84	3
2822	Clinical Routine Analysis Applications	84	3
2823	Clinical Bacteriology and Parasitology Techniques	120	4
		456	16

THIRD QUARTER			
2830	Clinical Chemistry Techniques	168	6
2831	Clinical Hematology Applications	240	8
2832	Clinical Serology Techniques	72	2
		480	16

FOURTH QUARTER			
2840	Clinical Chemistry Applications	240	8
2841	Clinical Bacteriology and Parasitology Applications	160	6
2842	Clinical Serology Applications	80	2
		480	16

Career Opportunities: Medical Laboratory Assistant.

FIFTH QUARTER			
2850	Technical Algebra	60	5
2851	Chemistry for Medical Laboratory Technicians	36	3
2852	Laboratory Methods for Medical Laboratory Technicians I	144	6
2853	Human Relations	36	3
		276	17

SIXTH QUARTER			
2860	Principles of Biochemistry	36	3
2861	Laboratory Methods for Medical Laboratory Technicians II	144	6
2862	Physiology	36	3
2863	Instrumentation	60	4
		276	16

SEVENTH QUARTER			
2870	General Pathology	36	3
2871	Statistics	48	4
2872	Introduction to Data Processing and Programming	84	5
2873	Examination Review	60	5
		228	17

Career Opportunities: Medical Laboratory Technician.

Total Contact Hours: 2,652
Total Credits: 117

COURSE DESCRIPTIONS

Skills Advancement — Hours: Credits:

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and science, with supplementary material oriented toward Health Occupations.

COURSE DESCRIPTIONS	Hours	Credits

2810 Anatomy and Physiology 48 4

The normal human body as a structural and functional unit. Homeostatic mechanisms will form a major portion of the course with emphasis on the physiology of the body.

2811 Fundamentals of Laboratory Techniques 120 6

Elementary and basic skills encountered in the clinical laboratory. Identification of the role of the laboratory assistant in the clinical laboratory.

2812 Medical Ethics and Personal Health 24 2

This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

2813 Clinical Blood Bank Techniques 84 3

Principles and practice of laboratory techniques in blood bank.

2814 Clinical Routine Analysis Techniques 84 3

Principles and practice of clinical laboratory techniques in the routine analysis of body fluids.

2815 Clinical Practicum 96 1

This course is designed to provide the student with practice time in a clinical area of choice either to reinforce or expand abilities.

2820 Clinical Hematology Techniques 168 6

Principles and practice of laboratory techniques in hematology.

2821 Clinical Blood Bank Applications 84 3

Studies of the principles and performance of the routine procedures in the Clinical Laboratory Blood Bank, consisting of detection of various blood group system antigens and antibodies. Inclusive shall be immunologic theories; compatibility testing theories; hemolytic disease of the newborn, procedures and principles; donor screening, phlebotomy and processing; and recommendation of the American Association of Blood Banks.

2822 Clinical Routine Analysis Applications 84 3

Study of the clinical applications of routine analysis in the hospital laboratory.

2823 Clinical Bacteriology and Parasitology Techniques 120 4

Principles and practice of laboratory techniques in bacteriology and parasitology.

2830 Clinical Chemistry Techniques 168 6

Principles and practice of laboratory techniques of clinical chemistry.

2831 Clinical Hematology Applications 240 8

Study and practice of the clinical applications of hematology in the hospital laboratory.

2832 Clinical Serology Techniques 72 2

Principles and practice of laboratory techniques of serology.

2840 Clinical Chemistry Applications 240 8

Practice of clinical applications of chemical analysis in the clinical laboratory.

2841 Clinical Bacteriology and Parasitology Applications 160 6

Study and practice of the clinical applications of bacteriology and parasitology in the hospital laboratory.

2842 Clinical Serology Applications 80 2

Study and practice in the clinical application of serology in the hospital laboratory.

COURSE DESCRIPTIONS	Hours	Credits

2850 Technical Algebra 60 5

Basic algebra including the operations with signed numbers, variables, first degree equations, special products, factoring, algebraic fractions and systems of linear equations. Slide rule techniques are emphasized related to the clinical laboratory.

2851 Chemistry for Medical Laboratory Technicians 36 3

Principles and theory of general chemistry including solutions, acids and bases, chemical kinetics and equilibriums. Organic chemistry and bio-chemistry principles are introduced.

2852 Laboratory Methods for Medical Laboratory Technicians I 144 6

The principles and practices of advanced laboratory techniques in hematology, serology, immunohematology and routine analysis.

2853 Human Relations 36 3

In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

2860 Principles of Biochemistry 36 3

A study of structures in relationship to biological functions of cellular constituents; carbohydrates, proteins, lipids, nucleic acids and enzymes, metabolic processes and control in the human body is made in this course.

2861 Laboratory Methods for Medical Laboratory Technicians II 144 6

The principles and practices of clinical bacteriology and chemistry including micro-biological chemical reactions, selective and differential media, clinical enzymes, biochemistry and blood gasses.

2862 Physiology 36 3

A study of the function of the various systems of the human body in health.

2863 Instrumentation 60 4

Instrumentation theory and practice as applied to electronic equipment and automated systems in the medical laboratory.

2870 General Pathology 36 3

A study of the body in disease utilizing case studies, laboratory data and autopsy findings.

2871 Statistics 48 4

Descriptive statistics (collection and presentation of data, frequency distributions, measures of central tendency, dispersion and skewness), index numbers, simple correlation and regression, curve fitting and introduction to statistical inference, sampling and probability are studied.

2872 Introduction to Data Processing and Programming 84 5

This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

2873 Examination Review 60 5

In-depth view of major premises and theory in Clinical Laboratory Technology. Clinical test procedures and their alternatives as well as problem solving techniques are stressed.

DENTAL ASSISTANT

Students in the Dental Assistant program will become familiar with all of the equipment and supplies found in a typical dental office. In addition to classroom lectures and demonstrations, the students will provide chairside assistance to dentists by learning to manipulate dental materials used in restoring teeth and the making of impressions and models. They will learn the methods of sharpening and sterilizing instruments and the processing of dental X-ray film. The curriculum includes instruction in dental anatomy and physiology, bacteriology, pharmacology, oral pathology, dental materials, chairside assisting, typing, English, human relations and record keeping. A large portion of the student's time is spent in laboratory work and clinical experiences.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

DENTAL ASSISTANT

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, typing and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

FIRST QUARTER		Hours	Credits
3010	Introduction to Practice	48	4
3011	Dental Anatomy	48	3
3012	Dental Ethics and Organizations	24	2
3013	Dental Radiography	36	2
3014	Dental Materials and Laboratory I	36	2
3015	Clinical Practice I	120	2
		312	15

SECOND QUARTER			
3020	Clinical Practice II	120	2
3021	Business Communications	36	3
3022	Dental Office Management I	48	4
3023	Personal and Community Health	24	2
3024	Basic Science for Dental Assistants	48	4
3025	Dental Materials and Laboratory II	36	2
		312	17

THIRD QUARTER			
3030	Nutrition	24	2
3031	Personal Development	24	2
3032	Clinical Practice III	240	4
3033	Human Relations	36	3
3034	Dental Office Management II	36	3
		360	14

Career Opportunities: Dental Assistant.

Didactic Contact Hours: 504
Clinical Contact Hours: 480
Total Contact Hours: 984
Total Credits: 46

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and typing, with supplementary material oriented toward Health Occupations.

3010 Introduction to Practice 48 4

This course presents the objectives, responsibilities, and scope of service of the dental assistant in practice. A working knowledge of dental terminology. A knowledge of the Code of Ethics for dental assistants and the laws which govern the practice of dentistry. An understanding of the functions of other auxiliary dental personnel and their legal limitations. A knowledge of general housekeeping duties.

3011 Dental Anatomy 48 3

Oral anatomy, tooth morphology, basic embryology, histology and neck anatomy comprise the material studied. The emphasis is on the dental assistant's need to understand this material as she assists the dentist.

3012 Dental Ethics and Organizations 24 2

The role and responsibilities of dental assistants, legal and ethical requirements are stressed as well as dental organizations, roles and responsibilities.

3013 Dental Radiography 36 2

Basic procedures in X-Ray techniques for dental assistants are presented. Personal and patient safety are stressed.

3014 Dental Materials and Laboratory I 36 2

Students study the properties of dental materials, the mode of manipulation, and the technical duties a dental assistant can perform. Practice mixing, boxing and beading, pouring, and trimming gypsum casts and models. Oral anatomy is emphasized and tooth forms are carved in wax.

3015 Clinical Practice I 120 2

An introduction to the eight working areas of the dental office; sterilization and disinfection methods; the instruments and medicaments used in the treatment of patients; preparation of instrument trays and restorative materials necessary for the varied operations performed.

3020 Clinical Practice II 120 2

Techniques of four-handed dentistry are perfected and the production, development, mounting and evaluation of dental radiographs are learned.

3021 Business Communications 36 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

3022 Dental Office Management I 48 4

The principles of bookkeeping, filing and insurance, office practice, and management as related to the dental office. Techniques of appointment control, records, credit and payment plans.

3023 Personal and Community Health 24 2

Common community health concerns are explored, such as: drug, alcohol, and smoking abuse; venereal disease; environmental control; consumer protection; and preventative health care. Specific agencies that contribute to the well-being of individuals are discussed. The emphasis of the course is upon healthful living practices and problem solving techniques.

3024 Basic Science for Dental Assistants 48 4

The basic concepts of first aid, microbiology, nutrition and pharmacology are presented with emphasis on the assistant's role in the combating of dental disease.

3025 Dental Materials and Laboratory II 36 2

Through lecture, demonstrations, and practice, the student experiences the handling of dental impression materials used in general and prosthetic dentistry. Techniques such as: investing, casting, and polishing inlays; construction of individual resin, impression trays; and bite plates and bite rims for construction of dentures are employed.

3030 Nutrition 24 2

Study of the basic principles of nutrition and the relation of these principles of health care. Dietary allowances for various age groups as well as socio-economic, ethnic, and religious food preferences are discussed.

3031 Personal Development 24 2

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen fields.

3032 Clinical Practice III 240 4

Application of skills in cooperating dental offices and clinics.

3033 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

3034 Dental Office Management II 36 3

A continuation of Dental Office Management I (3022).

EMERGENCY CARE TECHNICIAN

The Emergency Care Technician (ECT) Program will prepare students with skill in emergency treatment procedures short of those rendered by physicians or by paramedical personnel under the direct supervision of a physician. The student will be trained in the use of and care of equipment required to accomplish required tasks in the hospital and/or ambulance.

This program is especially helpful to people already employed in the occupational area as well as those not previously employed. The broad base provided by this program (training in hospitals as well as ambulances) allows for employment in hospital emergency rooms, trauma centers, critical case centers, as well as in ambulance corps.

EMERGENCY CARE TECHNICIAN
Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

		Hours	Credits
FIRST QUARTER			
3215	Integrated Basic Science I	48	4
3216	Medical Law and Ethics	24	2
3217	Basic Emergency Medical Technician-Ambulance Techniques	81	5
3218	Orientation to Emergency Medical Services	60	5
		213	16
SECOND QUARTER			
3223	Integrated Basic Science II	48	4
3224	Basic Cardiology	36	3
3225	Introduction to Disease Conditions I	30	3
3226	Pharmacology I	24	2
3227	Clinical Experience	100	5
		238	17
THIRD QUARTER			
3232	Advanced Cardiology	60	4
3233	Human Relations	36	3
3234	Disease Conditions II	30	3
3235	Pharmacology II	30	3
3236	Medical/Surgical Techniques I	150	5
		306	18
FOURTH QUARTER			
3240	Medical/Surgical Techniques II	80	5
3241	Clinical Application	288	8
		368	13
	Total Contact Hours:		1125
	Total Credits:		64

		Contact Hours	Credits
3215	**Integrated Basic Science I**	48	4

The study of the human body as an integrated unit, including anatomy, physiology, medical terminology, and application of physics, chemistry and microbiology.

3216	**Medical Law and Ethics**	24	2

The ethics of medicine and medical practice are studied. Legal requirements and implications to medical professional and sub-professional practices are stressed.

3217	**Basic Emergency Medical Technician-Ambulance Techniques**	81	5

This course provides for development of basic principles of emergency care in ambulance operation. The course includes skills development in basic procedures utilized in airway management, pulmonary depression and arrest, cardiac arrest, bleeding and shock, and management of acute medical and psychiatric problems. Principles of emergency care of wounds, burns and environmental injuries are presented, as well as related orthopaedic injuries and sterile techniques.

3218	**Orientation to Emergency Medical Services**	60	5

An introductory course, intended to acquaint the student with the basic principles of emergency medical care in practice. The course includes familiarization of the hospital environment so the student becomes accustomed to performing basic procedures smoothly, without embarrassment or inconvenience to the patient. Training is to be conducted in the Emergency Room of participating hospitals and in conjunction with the area ambulance service.

3223	**Integrated Basic Science II**	48	4

Continuation of Integrated Basic Science I (3215).

3224	**Basic Cardiology**	36	3

This course provides for recognition of the basic cardiology system, and includes instruction in cardio-physiology, pathology, electrocardiography and basic principles of cardiac monitoring.

3225	**Introduction to Disease Conditions I**	30	3

This course is designed to present basic concepts of disease, its causes, and the changes in the body functions that occur. Special emphasis on the functional disturbances are presented, correlating patient symptoms to emergency and in-patient treatment.

3226	**Pharmacology I**	24	2

This course is designed to acquaint the ECT with drug administration, with special emphasis on weights and measures and accurate preparation of oral and hypodermic dosages. The course will introduce the ECT to the special precautions to be taken in the administration of drugs, as well as the legal obligations as part of the medical team.

COURSE DESCRIPTIONS	Hours	Credits

3227 Clinical Experience 100 5

Clinical experience in cooperating hospitals to enable students to correlate principles and concepts presented in the classroom to emergency care in practice. Experiences include 50 hours in the emergency room, 30 hours in the cardiac care unit, 10 hours in obstetrics which includes prepartum, postpartum, delivery and recovery, and 40 hours in orthopaedics.

3232 Advanced Cardiology 60 4

The course includes electrocardiology with emphasis on arrhythmias and myocardial infarction, interpretation of EKG and arrhythmiae, correlating patient symptoms and treatment. It will also include monitors and defibrillators with understanding of operations and electronics, a therapeutic approach to coronary systems, complications, shock, drugs and treatment.

3233 Human Relations 36 3

In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

3234 Disease Conditions II 30 3

A continuation of Disease Conditions I (3225).

3235 Pharmacology II 30 3

This course is designed to acquaint the student with the administration of drugs and includes instruction in the scope of pharmacology, classification of drugs, dosage forms, preparation, methods of administration, interactions and incompatibilities. The use of drugs and medications as related to emergency care in practice are stressed.

3236 Medical/Surgical Techniques I 150 5

This course is specifically formulated for the ECT student, and is designed to develop basic principles of sterile technique in relationship to the pre-operative and post-operative care of the patient. It includes an orientation to an ideal situation, adaption of basic principles, patient positioning and transportation; an understanding of basic concepts of anesthesiology; principles and skill in handling drapes, care of contaminated cases; understanding of explosion hazards and prevention of infection; processing and preparation of non-disposable items. Also covered are principles of sterilization, instrument identification, suture and needle use; care of surgical specimens; importance of accurate record keeping; surgical preps and skill in hand scrubbing, gowning and gloving procedures.

3240 Medical/Surgical Techniques II 80 5

Continuation of Medical/Surgical Techniques I (3236).

3241 Clinical Application 288 8

A situational review to enable the student to correlate principles and concepts presented in the classroom to emergency care in practice. Includes closely supervised observation and assistance in emergency departments, intensive care units and operating rooms of cooperating hospitals.

MEDICAL ASSISTANT

The Medical Assistant program is designed to provide educational opportunity for individuals to develop administrative and clinical skills needed to assist physicians in offices, clinics or other health care agencies. Medical Assistants are also employed in hospitals, nursing homes and in the health insurance industry.

Growing demands on the time of physicians have made the medical office assistant one of the most rapidly growing and most important fields of work in recent years.

Duties of the Medical Assistant include: preparing patients for physical examination, cleaning and sterilizing equipment and maintaining supplies, collecting specimens, performing simple laboratory tests and carrying out the business-office activities of the doctor.

In addition to classroom study, each Medical Assistant will have experience in "on-the-job" practice under the direct supervision of a physician and a medical assistant. This practical experience is coordinated by a member of the College faculty.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

MEDICAL ASSISTANT

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, typing, and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

FIRST QUARTER		Hours	Credits
3710	Integrated Basic Science I	48	4
3711	Medical Law and Ethics	24	2
3712	Medical Office Procedures Clinical I	96	6
3713	Medical Office Bookkeeping	60	4
		228	16

SECOND QUARTER			
3720	Integrated Basic Science II	48	4
3721	Medical Office Procedures, Administrative	60	4
3722	Medical Typewriting I	72	3
3723	Personal Development	24	2
3724	Medical Linguistics I	48	2
		252	15

THIRD QUARTER			
3730	Medical Assistant Laboratory Techniques	72	4
3731	Medical Assistant Clinical Experience I	192	4
3732	Medical Office Communications	48	4
3733	Medical Typewriting II	72	3
		384	15

Career Opportunities: Medical Assistant Certificate (Grade 1)

FOURTH QUARTER			
3740	Medical Linguistics II	48	2
3741	Medical Office Procedures Clinical II	96	6
3742	Applied Psychology	36	3
3743	Machine Transcription, Medical I	60	3
3744	Microbiology	48	3
		288	17

FIFTH QUARTER			
3750	Medical Office Procedures Clinical III	84	5
3751	Machine Transcription, Medical II	60	3
3752	Business Communications	36	3
3753	Drugs and Solutions	24	2
		204	13

SIXTH QUARTER			
3760	Introduction to Data Processing	84	5
3761	Community Health	24	2
3762	Oral Communications	24	2
3763	Medical Office Management	36	3
3764	Payroll and Taxes	48	3
		216	15

Career Opportunities: Medical Assistant (Grade 2).

Total Contact Hours: 1,572
Total Credits: 91

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and typing, with supplementary material oriented toward Health Occupations.

3710 Integrated Basic Science I — 48 — 4

The study of the human body as an integrated unit, including anatomy, physiology, medical terminology, and application of physics, chemistry and microbiology.

3711 Medical Law and Ethics — 24 — 2

The ethics of medicine and medical practice are studied. Legal requirements and implications to medical professional and sub-professional practices are stressed.

3712 Medical Office Procedures — Clinical I — 96 — 6

This course is designed to familiarize the Medical Assistant with preparing the patient for examination in the physician's office; taking temperature, pulse, respiration, blood pressure; assisting the doctor; care and preparation of sterile equipment;

methods of sterilization; care of stock medications and drug samples; nutrition and special diets; X-Ray techniques; knowledge and care of instruments; needles, and syringes; ordering supplies; and appropriate action in emergency situations.

3713 Medical Office Bookkeeping 60 4

A course designed to introduce the basic principles of bookkeeping as utilized primarily in a medical office setting. This course includes the principles of debit and credit, double entry bookkeeping, use of journals (particularly combined cost journal) and analyzing transactions. Also included are the use of ledgers, posting procedures, cash basis of accounting, handling petty cash, banking procedures, payroll, depreciation of accounts, balance work sheets and income statements.

3720 Integrated Basic Science II 48 4

A continuation of Integrated Basic Science I (3710).

3721 Medical Office Procedures, Administration 60 4

This course is designed to provide a basic understanding of the secretarial and bookkeeping duties and responsibilities as pertinent to the medical offices and health care agencies. It includes medical correspondence and records, insurance forms, case histories of patients, filing, financial administration, correct contact procedures with patients, hospitals, and professional agencies. It also includes considerations for desirable personality traits, interpersonal relationships, and attitudes within the medical office.

3722 Medical Typewriting I 72 3

This course is designed to improve production typewriting ability in the medical field. Emphasis is placed on articles, medical forms, case histories and correspondence utilizing medical terminology.

3723 Personal Development 24 2

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen field.

3724 Medical Linguistics I 48 2

This course presents the ethics of medicine, professional conduct and words from Greek and Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of medical words through the Greek and Latin parts, correct spelling of these terms, and the intelligent use of the medical dictionary.

3730 Medical Assistant Laboratory Techniques 72 4

An introduction to various laboratory and X-Ray procedures with emphasis on preparation of the patient for various procedures, their purposes and the expected norms of results.

3731 Medical Assistant Clinical Experience I 192 4

Applied learning experiences in selected physicians' offices, clinics and hospitals.

3732 Medical Office Communications 48 4

Communications skills development directed toward the medical office are studied. Human relations necessary in medical office communications are emphasized.

3733 Medical Typewriting II 72 3

A continuation of Medical Typewriting I (3722), with emphasis on development of speed and accuracy.

COURSE DESCRIPTIONS Hours Credits

3740 Medical Linguistics II 48 2

Medical terms in their proper relationship to the anatomy of the body and the related disease, anomalies and surgeries are studied.

3741 Medical Office Procedures — Clinical II 96 6

This course is designed as an expansion of Medical Assistant Laboratory Techniques (3730). Special emphasis is placed on principles and procedures as they are related to office practice and the individual types of health.

3742 Applied Psychology 36 3

This course presents a study of psychological behavior in medical relationships. Information concerning human needs and behavior in health and illness is designed to improve individual attitudes, productivity and personal morale in working situations.

3743 Machine Transcription, Medical I 60 3

This course is designed to provide a basic understanding of the techniques of dictation and transcription used by the medical assistant. Transcription in the following fields of medicine are studied: internal medicine, surgery, obstetrics, gynecology, pediatrics, orthopedics, otorhinolaryngology, urology, ophthalmology, neurology, psychiatry and dermatology.

3744 Microbiology 48 3

Study includes an introduction to the basic principles of microbiology including definitions, classification, biological requirements and activities, specimen collection, infection, immunity, destruction and microbe description.

3750 Medical Office Procedures — Clinical III 84 5

A continuation of Medical Office Procedures — Clinical II (3741).

3751 Machine Transcription, Medical II 60 3

A continuation of Machine Transcription, Medical I (3743), with emphasis on case studies and reports.

3752 Business Communications 36 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

3753 Drugs and Solutions 24 2

The objective of this course is to familiarize hygiene students with the basic aspects relating to the physical and chemical properties, dosage, methods of administration, and therapeutic use of pharmaceutic preparations used in the medical office.

3760 Introduction to Data Processing and Programming 84 5

This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

3761 Community Health 24 2

A study of health services in the community; topics considered include preventative services, institutional components of health

COURSE DESCRIPTIONS	Hours	Credits

care systems, financing health care and manpower. A section of the course will consider general issues of quality of environment, pollution control and population control. A third section will be concerned with planning research and health problems as issues of public policy.

3762 Oral Communications 24 2

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

COURSE DESCRIPTIONS	Hours	Credits

3763 Medical Office Management 36 3

This course supplies the background for organization and management of a physician's office and an in-depth study of governmental types of health insurance coverage.

3764 Payroll and Taxes 48 3

Skills are developed in Federal and State withholding tax procedures. The student will learn to prepare periodic statements and withholding and income tax returns. Study of payroll systems as applied to the medical office.

OBSTETRICAL TECHNICIAN

The Obstetrical Technician performs assigned tasks in preparing for and assisting with procedures in the delivery room and other obstetrical (OB) units in the hospital. Duties include setting up instruments and supplies, scrubbing with the physician for normal deliveries and cesarean section, anticipating his needs during the delivery, and managing contaminated instruments and supplies utilizing strict aseptic technique. The OB Technician also assists with admission of OB patients by taking patients' vital signs, detecting fetal heartbeat, and detecting abnormalities in labor and recovery.

The OB Technician program is four quarters (12 months) in duration and encompasses theory and clinical practice in hospital OB, surgery and gynecology departments.

To determine which regional institutues offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

OBSTETRICAL TECHNICIAN

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

	FIRST QUARTER	Hours	Credits
4010	Surgical Anatomy I	60	5
4011	Operating Room Techniques I	168	5
4012	Microbiology For Operating Room Technicians	36	3
4013	Medical Ethics and Personal Health	24	2
		288	15
	SECOND QUARTER		
4020	Surgical Anatomy II	36	3
4021	Operating Room Techniques III	72	5
4022	Surgical Procedures I	60	5
4023	Clinical Applications I	240	3
		408	16
	THIRD QUARTER		
4030	Obstetrical Procedures I	96	7
4031	Obstetrical Clinical Applications I	240	3
4032	Human Relations	36	3
		372	13
	FOURTH QUARTER		
4040	Obstetrical Procedures II	60	5
4041	Obstetrical Clinical Applications II	336	7
		396	12

Career Opportunities: Obstetrical Technician.

Total Contact Hours: 1,464
Total Credits: 56

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction trailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

4010 Surgical Anatomy I — 60 — 5

A study of the anatomy and physiology of the human body as an integrated unit. The basic approach of dividing the body into its basic systems and then correlating the system with specific surgical procedures is used. Emphasis is put on structure specific to the operating room. The course includes the body as a whole, the skin, general survey, the skeletal, muscular, cardiovascular, lymphatic and the respiratory systems.

4011 Operating Room Techniques I — 168 — 5

This course is concerned with development of basic principles of sterile technique in relationship to the pre-operative, operative and post-operative care of the patient. It includes an orientation to an ideal situation, adoption of basic principles, patient positioning and transportation, the understanding of basic concepts of anesthesiology, principles and skill in handling drapes, care of contaminated cases, understanding of explosion hazards and prevention of infections, processing, and preparation of non-disposable items, principles of sterilization, instrument identification, suture and needle use, care of surgical specimens, importance of accurate record keeping, surgical preps and skill in hand scrubbing and gowning and gloving procedures.

4012 Microbiology for Operating Room Technicians — 36 — 3

This course is specifically formulated for the Operating Room Technician student and is designed to give this student a basic background in the study of microbes, microbial pathogens, methods of studying microbes, and microbial destruction. The basic knowledge of microbiology presented is correlated by the Operating Room Technician, in the operating room, the obstetrical unit, and the emergency room.

4013 Medical Ethics and Personal Health — 24 — 2

This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

4020 Surgical Anatomy II — 36 — 3

A study of the human body as a whole or integrated unit correlating the systems of the body with specific surgical procedures including the digestive, urinary, nervous, reproductive and endocrine systems with an emphasis on structures specific to the operating room.

4021 Operating Room Techniques II — 72 — 5

This course is concerned with the practical application of aseptic technique. Role playing is used to help the student have experience. In applying all phases of aseptic technique and to learn step by step procedures for typical general surgery operations.

COURSE DESCRIPTIONS Hours Credits

4022 Surgical Procedures I 60 5

A basic study of surgical procedures in relation to the total physiological aspects of surgical interaction. This includes a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedure and a review of the total patient including typical patient, diagnostic tests, and immediate post-operative care.

4023 Clinical Applications I 240 3

Clinical experience in the cooperating hospitals will enable the Operating Room Technician student to correlate the basic principles and concepts of classroom lecture to the working situation. Experiences include scrubbing and circulating on selected major and minor operations, observing and assisting with selected diagnostic procedures, observing and assisting with procedures in obstetrics and the emergency room.

4030 Obstetrical Procedures I 96 7

Basic nursing procedures for mothers and newborn, including labor, delivery room, post-partum care, and basic nursery techniques.

COURSE DESCRIPTIONS Hours Credits

4031 Obstetrical Clinical Applications I 240 3

Clinical experience in cooperating hospitals in the Obstetrical-Gyn service including preparation and observation of labor patients, assisting in delivery rooms and post-partum care. Experiences also include newborn nursery and care of the gynecologic patient.

4032 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

4040 Obstetrical Procedures II 60 5

Nursing care of gynecological patients including diagnostic-therapeutic measures and post-operative care.

4041 Obstetrical Clinical Applications II 336 7

Continuation of Obstetrical Clinical Applications I (4031).

OPERATING ROOM TECHNICIAN

Somewhat new in the field of medicine is the Operating Room Technician (ORT). The ORT works under the supervision of a registered nurse in the operating room as a vital member of the surgical team. The ORT assists the physician by selecting and preparing instruments for surgery, preparing patients for surgery, passing sterile instruments to the surgeon, and cleaning and maintaining equipment.

There is an urgent need for operating room technicians to work in hospital operating rooms, trauma centers and delivery rooms. The work offers a fairly flexible schedule as ORT's are needed around the clock.

This one-year program leads to a technical certificate. The program includes classroom instruction and "on-the-job" practical experience in affiliating hospitals. Clinical experience is coordinated and supervised by college operating room technician faculty members. Graduates of the program are qualified for the national examination for Operating Room Technicians.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

OPERATING ROOM TECHNICIAN

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

FIRST QUARTER		Hours	Credits
4210	Surgical Anatomy I	60	5
4211	Operating Room Techniques I	168	5
4212	Medical Ethics and Personal Health	24	2
4213	Microbiology for Operating Room Technicians	36	3
		288	15

SECOND QUARTER			
4220	Surgical Anatomy II	36	3
4221	Surgical Procedures I	60	5
4222	Clinical Applications I	240	3
4223	Operating Room Techniques II	72	5
		408	16

THIRD QUARTER			
4230	Surgical Procedures II	60	5
4231	Clinical Applications II	336	7
	*Restricted Elective	36	3
		432	15

FOURTH QUARTER		Hours	Credits
4240	Clinical Applications III	336	7
	*Restricted Elective	60	5
		396	12

Career Opportunities: Operating Room Technician.

Total Contact Hours: 1,524
Total Credits: 55

*Restricted Electives:

4233	Human Relations	36	3
4232	Obstetrical Techniques	36	3
4241	Emergency Room Techniques	24	2
4242	Surgical Procedures III	60	5

All courses must be taken in sequence except the Restricted Electives which may be taken any quarter. Hours shown for Clinical Applications I, II, III are minimum and additional hours may be required.

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

4210 Surgical Anatomy I — 60 — 5

A study of the anatomy and physiology of the human body as an integrated unit. The basic approach of dividing the body into its basic systems and then correlating the system with specific surgical procedures. Emphasis is put on structure specific to the operating room. The course includes the body as a whole, the skin, general survey, the skeletal, muscular, cardiovascular, lymphatic and the respiratory systems.

4211 Operating Room Techniques I — 168 — 5

This course is concerned with development of basic principles of sterile technique in relationship to the pre-operative, operative and post-operative care of the patient. It includes an orientation to an ideal situation, adoption of basic principles, patient positioning and transportation, the understanding of basic concepts of anesthesiology, principles and skill in handling drapes, care of contaminated cases, understanding of explosion hazards and prevention of infections, processing, and preparation of non-disposable items, principles of sterilization, instrument identification, suture and needle use, care of surgical specimens, importance of accurate record keeping, surgical preps and skill in hand scrubbing and gowning and gloving procedures.

4212 Medical Ethics and Personal Health — 24 — 2

This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

COURSE DESCRIPTIONS | Hours | Credits

4213 Microbiology for Operating Room Technicians 36 3

This course is specifically formulated for the operating room technician student and is designed to give this student a basic background in the study of microbes, microbial pathogens, methods of studying microbes, and microbial destruction. The basic knowledge of microbiology presented is correlated by the operating room technician in the operating room, the obstetrical unit, and the emergency room.

4220 Surgical Anatomy II 36 3

A study of the human body as a whole or integrated unit correlating the systems of the body with specific surgical procedures including the digestive, urinary, nervous, reproductive and endocrine systems with an emphasis on structures specific to the operating room.

4221 Surgical Procedures I 60 5

A basic study of surgical procedures in relation to the total physiological aspects of surgical interaction. This includes a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedure and a review of the total patient including typical patient, diagnostic tests, and immediate post-operative care.

4222 Clinical Applications I 240 3

Clinical experience in the cooperating hospitals will enable the operating room technician student to correlate the basic principles and concepts of classroom lecture to the working situation. Experiences include scrubbing and circulating on selected major and minor operations, observing and assisting with selected diagnostic procedures and observing and assisting with procedures in obstetrics and the emergency room.

4223 Operating Room Technique II 72 5

This course is concerned with the practical application of aseptic technique. Role playing is used to help the student have experience. In applying all phases of aseptic technique and to learn step by step procedures for typical general surgery operations.

COURSE DESCRIPTIONS | Hours | Credits

4230 Surgical Procedures II 60 5

A study of advanced and specialized surgical procedures, in relation to the total physiological aspects of surgical interaction. This includes a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedures and a review of total patient including typical patient, diagnostic tests, and immediate post-operative care.

4231 Clinical Applications II 336 7

A continuation of Clinical Applications I (4222).

4232 Obstetrical Techniques 36 3

This course is designed to give the operating room technician student a basic understanding of the effect of pregnancy anatomically, physiologically, and psychologically on the obstetric patient. It is formulated to enable the operating room technician student to function in the obstetrical unit, and in the operating room on obstetrical cases, with a basic understanding of obstetrics.

4233 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

4240 Clinical Applications III 336 7

A continuation of Clinical Applications II (4231).

4241 Emergency Room Techniques

This course is designed to give the operating room technician student a basic understanding of the psychological and physiological effect of trauma on the emergency patient. It is formulated to give the operating room technician student a basic knowledge of emergency conditions, emergency procedures, and to enable the operating room technician student to function under adverse conditions that threaten a patient's well being.

4242 Surgical Procedures III 60 5

Study of specialized procedures in neuro-surgery, cardiovascular surgery and chest surgery. Pertinent anatomy and pathology as well as diagnostic tests and immediate post-operative care are stressed.

PRACTICAL NURSING

Practical nurses are needed to help care for medical and surgical patients, convalescents, handicapped people, and others who are ill. They work under the direction of physicians and professional nurses and perform a service vital to the people in a community.

In a hospital, a licensed practical nurse (LPN) works with other medical personnel as a member of the nursing team. Her duties in providing bedside care include taking and recording temperatures and blood pressures, changing dressings, administering certain prescribed medicines, bathing the patient, and helping in other ways.

Opportunities for employment may be found in hospitals, nursing homes, clinics, physicians' offices, sanitariums, long-term health-care facilities, public health agencies, and welfare and religious organizations.

The Practical Nursing program meets the requirements of the Indiana State Board of Nurses' Registration and Education and prepares candidates for licensure as a practical nurse in the State of Indiana.

Graduates of the practical nursing program will be awarded a technical certificate by the College. The program includes courses in basic science and nursing skills as well as extensive practical clinical experience in hospitals, nursing homes and other health care agencies. Clinical experience is under the direct supervision of the College Practical Nursing faculty.

Practical nursing students are expected to achieve satisfactory performance levels, as determined by the practical nursing department, in both theoretical and clinical areas of the program.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

PRACTICAL NURSING

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

	FIRST QUARTER	Hours	Credits
4410	Basic Science (Anatomy and Physiology)°	96	8
4411	Nursing Techniques and Care I	216	12
		312	20
	SECOND QUARTER		
4420	Nursing Techniques and Care II	96	8
4421	Medical-Surgical Nursing Experience I	216	6
4422	Nutrition°	24	2
4423	Seminar	24	2
		360	18
	THIRD QUARTER		
4430	Nursing Techniques and Care III	60	5
4431	Medical-Surgical Nursing Experience II	288	8
4432	Personal and Community Health°	24	2
		372	15
	FOURTH QUARTER		
4440	Maternal and Child Health	60	5
4441	Personal and Vocational Relations	24	2
4442	Maternal Child Care Practice	288	8
		372	15

Career Opportunities: Practical Nurse.

Total Contact Hours:	1,416
Total Practical Experience and Seminar:	792
Total Academic Clock Hours:	600
Total Credits:	68

°All courses must be taken in keeping with the sequence indicated in the curriculum outline except those identified by an asterisk (°) should they be offered.

The clinical experience ratio is: one hour of credit is assigned for each three contact hours of clinical experience (1:3).

COURSE DESCRIPTIONS — Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction trailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

4410 Basic Science (Anatomy and Physiology) 96 8

This course is designed to study the human body as an integrated unit including Anatomy, Physiology, Medical Terminology, Microbiology and an introduction to the study of common disease.

4411 Nursing Techniques and Care I 216 12

This course defines the role of the Practical Nurse and her relationship with members of other health teams. It is designed in harmony with current health practices emphasizing basic principles necessary for development of knowledge, skills and understanding in giving safe patient care.

4420 Nursing Techniques and Care II 96 8

The nursing care of adults of all ages with varying degrees of common disease conditions. Included in the study are the causes, symptoms and diagnostic tests of conditions such as allergies and cancer and disorders of the musculoskeletal, cardiovascular and

respiratory systems, and the gastrointestinal system including metabolism. Disease conditions or disorders of the endocrine system, the genito-urinary and reproductive systems, the skin, nervous sytems and disorders of the eye and ear are studied. Integrated throughout is the management of disease through diet therapy and appropriate nursing measures.

4421 Medical-Surgical Nursing Experience I 216 6

Supervised clinical assignments in selected hospitals, extended care facilities and nursing homes in medical and surgical nursing.

4422 Nutrition 24 2

Study of the basic principles of nutrition and the relation of these principles of health care. Dietary allowances for various age groups as well as socio-economic, ethnic, and religious food preferences are discussed.

4423 Seminar 24 2

Trends of vocational nursing, including historical development of nursing and the role of the practical nurse in relation to the functions of other members of the health care team. Communication skills functional to practical nursing are emphasized. Understanding the role of the practical nurse in hospitals, nursing homes and other health care agencies is stressed.

4430 Nursing Techniques and Care III 60 5

A continuation of Nursing Techniques and Care II (4420).

4431 Medical-Surgical Nursing Experience I 288 8

A continuation of Medical-Surgical Experience I (4421).

COURSE DESCRIPTIONS Hours Credits

4432 Personal and Community Health 24 2

Common community health concerns are explored, such as: drug, alcohol, and smoking abuse; venereal disease; environmental control; consumer protection; and preventative health care. Specific agencies that contribute to the well being of individuals are discussed. The emphasis of the course is upon healthful living practices and problem solving techniques.

4440 Maternal and Child Health 60 5

To prepare the student practical nurse with the techniques to meet the needs of both the mother and baby through understanding the maternity cycle of the mother, the growth, development and care of infants and children in both health and illness.

4441 Personal and Vocational Relations 24 2

Exploration of human motivation to gain maturity and personal satisfaction as an individual, a nurse and a citizen. The student is assisted with application and licensure and helped to understand the legal, ethical and social responsibilities of a licensed practical nurse. The emphasis is upon assisting the student to become a well-adjusted and valuable employee.

4442 Maternal and Child Care Practice 228 8

This course includes practice in care of the individual at the time of pregnancy and birth, care of the newborn infant, and growth and development of the child through the teen years. The more common complications of pregnancy and birth as well as care of the well and sick child are included.

Radiologic technology plays a major role in the diagnostic and therapeutic field of medicine. Radiological technologists prepare patients for X-ray, position them and, after determining the proper voltage, current and desired exposure time, operate the controls. They work under the direction of a radiologist.

About a third of the radiologic technologists work in hospitals. Others work in medical laboratories, physicians' and dentists' offices, clinics, public school systems, or for federal and state health agencies.

Other technologists may work in the new field of nuclear medicine in which radioactive isotopes are used for diagnosing and treating diseases. Duties in this field include assisting the radiologist in preparing and administering the prescribed radioisotope and operating special equipment for tracing and measuring radioactivity.

This curriculum introduces the student to the principles of radiologic technique, exposure, therapy, positioning, protection, and ethics and is conducted with clinical practice and supplemental instruction in the accredited hospitals.

Radiologic Technology is a two-year program offered by the College as a cooperative educational institution affiliated with hospital-approved schools of Radiologic Technology accredited by the American Registry of Radiologic Technologists. At the completion of the two-year program, the College awards an Associate of Applied Sciences Degree.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

RADIOLOGIC TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

FIRST QUARTER		Hours	Credits
4610	Medical Ethics and Personal Health	24	2
4611	Integrated Basic Science I	48	4
4612	Radiation Physics II	24	2
4613	X-Ray Technology	60	5
4614	Nursing Procedures for X-Ray Technicians	24	1
4615	Orientation to Radiologic Technology	12	0
0003	Fundamentals of Mathematics	60	5
		252	19

RADIOLOGIC TECHNOLOGY

SECOND QUARTER		Hours	Credits
4620	Integrated Basic Science II	48	4
4621	Radiation Physics II	24	2
4622	Principles of Radiographic Exposures I	12	1
4623	Radiographic Positioning I	12	1
4624	Film Critique I	36	3
4625	X-Ray Clinical Practice I	348	1
		480	12

THIRD QUARTER			
4630	Human Relations	36	3
4631	Principles of Radiographic Exposures II	24	2
4632	Radiographic Positioning II	24	2
4633	Film Critique II	36	3
4634	X-Ray Clinical Practice II	348	1
4635	Film Quality	12	1
		480	12

FOURTH QUARTER			
4640	Principles of Radiographic Exposures III	24	2
4641	Radiographic Positioning III	24	2
4642	Introduction to Technical Communications	36	2
4643	Film Critique III	36	3
4644	X-Ray Clinical Practices III	348	1
4645	Community Health	24	2
		492	12

FIFTH QUARTER			
4650	Microbiology	24	2
4651	Radiographic Positioning IV	24	2
4652	Special Procedures I	24	2
4653	Departmental Administration I	24	2
4654	Film Critique IV	36	3
4655	X-Ray Clinical Practice IV	348	1
		480	12

SIXTH QUARTER			
4660	Oral Communications	24	2
4661	Radiation Therapy Positioning	24	2
4662	Special Procedures II	24	2
4663	Departmental Administration II	24	2
4664	Film Critique V	36	3
4665	X-Ray Clinical Practice V	348	1
		480	12

SEVENTH QUARTER			
4670	Radiation Therapy	24	2
4671	Special Procedures III	24	2
4672	Accounting I	48	4
4673	Film Critique VI	36	3
4674	X-Ray Clinical Practice VI	348	1
		480	12

EIGHTH QUARTER			
4680	Introduction to Data Processing	48	3
4681	Equipment Maintenance	24	2

EIGHTH QUARTER (continued)		Hours	Credits
4682	General Examination Review	36	3
4683	Film Critique VII	36	3
4684	X-Ray Clinical Practices VII	348	1
		492	12

Career Opportunities: Radiologic Technician.

Total Contact Hours: 3,720
Total Credits: 103

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

4610 Medical Ethics and Personal Health — 24 — 2

This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

4611 Integrated Basic Science I — 48 — 4

The study of the human body as an integrated unit, including anatomy, physiology, medical terminology, and applications of physics, chemistry and microbiology.

4612 Radiation Physics I — 24 — 2

An introduction to the science of Radiation Physics essential for an understanding in the production of X-Ray, including radiation protection.

4613 X-Ray Technology — 60 — 5

The theory of X-Ray exposure factors, which enables the student to correlate this knowledge to practical application, and acquaints the student with the care and handling of film and processing equipment.

4614 Nursing Procedures for X-Ray Technicians — 24 — 1

The basic knowledge of nursing procedures pertinent to X-Ray technology.

4615 Orientation to Radiologic Technology — 96 — 0

The application of classroom and laboratory learning in the affiliating hospital school including an introduction to the radiology department and the hospital facility, office procedures, safety and first aid, and the routines pertinent to exposure factors and positioning.

0003 Fundamentals of Mathematics — 60 — 5

A course covering some of the topic of Intermediate Algebra and Trigonometry. Factoring and linear equations are included as well as fundamental trigonometric functions and solutions of triangles.

4620 Integrated Basic Science II — 48 — 4

A continuation of Integrated Basic Science I (4611).

4621 Radiation Physics II — 24 — 2

A continuation of Radiation Physics I (4612).

4622 Principles of Radiographic Exposure I — 12 — 1

Radiographic Exposure I provides the student with a complete and thorough working knowledge of the manipulation of exposure factors.

COURSE DESCRIPTIONS — Hours — Credits

4623 Radiographic Positioning I — 12 — 1

This course provides the student with precise and detailed information of radiographic positioning of the structures and organs of the body.

4624 Film Critique I — 36 — 3

Introduces the student to constructive criticisms by the radiologists and instructors of X-Ray films providing the student with the knowledge of quality X-Rays, plus classes deemed necessary by the teaching supervisor and the College's teacher coordinator throughout the course.

4625 X-Ray Clinical Practices I — 348 — 1

The actual application of classroom and laboratory learning in the affiliating hospital school including radiographic positioning.

4630 Human Relations — 36 — 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

4631 Principles of Radiographic Exposure II — 24 — 2

Radiographic Exposure II provides the student with an understanding of basic principles needed to construct charts for all situations and all technique ranges, and to acquaint the student with image intensification, cine, cameras, and TV systems.

4632 Radiographic Positioning II — 24 — 2

This section provides more precise and more detailed information of radiographic positioning.

4633 Film Critique II — 36 — 3

A continuation of Film Critique I (4624).

4634 X-Ray Clinical Practices II — 348 — 1

A continuation of X-Ray Clinical Practices I (4625).

4635 Film Quality — 12 — 1

A lecture course presenting advanced information for the production of quality films.

4640 Principles of Radiographic Exposure III — 24 — 2

This section is devoted to the more refined radiographic exposures with emphasis on exposure factors for pediatric patients.

4641 Radiographic Positioning III — 24 — 2

This section is more detailed positioning with the troublesome special positions the student may encounter in the second year, with emphasis on pediatric positioning.

4642 Introduction to Technical Communications — 36 — 2

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

4643 Film Critique III — 36 — 3

A continuation of Film Critique II (4633).

4644 X-Ray Clinical Practices III — 348 — 1

A continuation of X-Ray Clinical Practices II (4634).

4645 Community Health — 24 — 2

A study of health services in the community; topics considered include preventative services, institutional components of health care systems, financing health care and manpower. A section of the course will consider general issues of quality of environment,

pollution control and population control. A third section will be concerned with planning research and health problems as issues of public policy.

4650 Microbiology 24 2

Nature and properties of microorganisms — bacteria, viruses, fungi, and parasites — with particular reference to their role in human disease. Basic principles of microbial physiology and of the interaction between infectious agents and man. Basic methods of isolation and identification of microorganisms are performed in the laboratory.

4651 Radiographic Positioning IV 24 2

This section is a more refined positioning. The student will be assisting the radiologists in a more prfessional capacity.

4652 Special Procedures I 24 2

This course acquaints the student with specialized and highly technical procedures used in Radiography.

4653 Departmental Administration I 24 2

The lecture course consisting of acquaintance with organization, function, supervision and financial arrangements relative to departments of radiology.

4654 Film Critique IV 36 3

A continuation of Film Critique III (4643).

4655 X-Ray Clinical Practices IV 348 1

A continuation of X-Ray Clinical Practices III (4644).

4660 Oral Communications 24 2

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

4661 Radiation Therapy Positioning 24 2

This section of positioning introduces the student to precise positioning of therapy patient in order for them to assist the radiologists.

4662 Special Procedures II 24 2

This section provides the student with working knowledge of specialized and highly technical procedures and an introduction to the contrast media used by the physicians and radiologists.

4663 Departmental Administration II 24 2

The student's function with the radiology and administrative departments.

COURSE DESCRIPTIONS Hours Credits

4664 Film Critique V 36 3

A continuation of Film Critique IV (4654).

4665 X-Ray Clinical Practices V 348 1

A continuation of X-Ray Clinical Practices IV (4655).

4670 Radiation Therapy 24 2

An introduction to assisting the radiologists with the radiation therapy necessary for treatment of tumors and all diseases requiring radiation therapy and the diagnostic value of radioactive isotopes.

4671 Special Procedures III 24 2

This course provides the student with more refined procedures and an introduction to intraoral Radiography.

4672 Accounting I 48 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises. Included are practical applications of the principles learned.

4673 Film Critique VI 36 3

A continuation of Film Critique V (4664).

4674 X-Ray Clinical Practices VI 348 1

A continuation of X-Ray Clinical Practices V (4665).

4680 Introduction to Data Processing 48 3

This course covers the history of data processing, scope and significance of data processing, punched card unit records, electronic data processing equipment and basic computer concepts.

4681 Equipment Maintenance 24 2

An understanding of X-Ray machinery and the fundamentals of preventive maintenance.

4682 General Examination Review 36 3

This section is a general review of all sections pertinent to the student's examination by the A.R.R.T.

4683 Film Critique VII 36 3

A continuation of Film Critique VI (4673).

4684 X-Ray Clinical Practices VII 348 1

A continuation of X-Ray Clinical Practices VI (4674).

RESPIRATORY THERAPY

Respiratory therapy is one of the newest allied health specialities. It is the treatment, management and care of patients who have a deficient or abnormal respiratory condition. It involves the therapeutic use of medical gasses, air and oxygen administering apparatus, environmental control systems, humidification and aerosols, drugs, and medications, ventilatory control, postural drainage, chest physio-therapy and breathing exercises, respiratory rehabilitation, assistance with cardiopulmonary resuscitation, and the maintenance of natural, artificial and mechanical airways.

The technician works under competent medical supervision but must be able to make fundamental and sound judgments about the application of specific procedures for individual patients. It is essential for the technician to understand, maintain and care for complex pulmonary and respiratory equipment.

There is an urgent need for respiratory therapy technicians to work with physicians and nurses as a team to help patients with respiratory disease. Hospitals employ the greatest number of respiratory therapy personnel, but employment opportunities are increasing at medical clinics and in physicians' offices.

Students study basic sciences, anatomy and physiology as well as inhalation therapy techniques. Clinical practice is provided in cooperating hospitals and clinics under the supervision of a physician and Respiratory Therapist. Coordination of the clinical practice is under the direction of a member of the College faculty.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

RESPIRATORY THERAPY TECHNICIAN

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

FIRST QUARTER		Hours	Credits
4810	Basic Science	48	4
4811	Anatomy and Physiology	48	4
4812	Respiratory Therapy Science I	96	6
4813	Nursing Techniques for Inhalation Therapy	48	3
		240	17

SECOND QUARTER		Hours	Credits
4820	Cardiopulmonary Physiology	48	4
4821	Respiratory Therapy Science II	96	6
4822	Inhalation Therapy Applications I	60	5
4823	Clinical Practicum I	200	3
		404	18

THIRD QUARTER			
4830	Laboratory Data	48	3
4831	Clinical Medicine	48	4
4832	Inhalation Therapy Applications II	60	5
4833	Clinical Practicum II	240	5
		396	17

FOURTH QUARTER			
4840	Inhalation Therapy Applications III	60	5
4841	Clinical Practicum III	360	8
		420	13

Career Opportunities: Respiratory Therapy Technician.

Total Didactic Contact Hours:	660
Total Clinical Contact Hours:	800
Total Contact Hours:	1,460
Total Credits:	65

COURSE DESCRIPTIONS

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and science, with supplementary material oriented toward Health Occupations.

4810 Basic Science — 48 hours, 4 credits

Study of the fundamentals and principles of chemistry, physics and mathematics related to respiratory therapy. English and metric measuring systems and symbol systems are introduced. General gas laws related to gas transport are stressed.

4811 Anatomy and Physiology — 48 hours, 4 credits

Study of the human body by basic system. Specific disease conditions related to respiratory therapy are presented.

4812 Respiratory Therapy Science I — 96 hours, 6 credits

This course gives a brief history of inhalation therapy and acquaints the student with the principles and practices of oxygen administration, humidity and aerosal therapy. Emphasis is placed on safety and equipment.

4813 Nursing Techniques for Inhalation Therapy — 48 hours, 3 credits

A basic course in nursing arts which includes patient needs, asepsis, vital signs, isolation techniques and charting.

4820 Cardiopulmonary Physiology — 48 hours, 4 credits

In depth study of the cardiopulmonary system with emphasis on airway management and cardiopulmonary resuscitation.

4821 Respiratory Therapy Science II — 96 hours, 6 credits

Students are acquainted with the principles and practices of mechanical respirators, airway management, chest physiotherapy, and pharmacology applied to inhalation therapy.

COURSE DESCRIPTIONS	Hours	Credits

4822 Inhalation Therapy Applications I 60 5

This course provides the student with an understanding of advanced physiology of the cardio-respiratory system. Also the application of inhalation therapy practices to various disease states is covered. Emphasis is placed on the correction of abnormal physiology. Students are given the opportunity to study the various applications of inhalation therapy by observation. Students are rotated through various clinical areas in the hospital.

4823 Clinical Practicum I 200 3

Students develop skills and knowledge by performing the various inhalation therapy tasks in clinical areas under supervision.

4830 Laboratory Data 48 3

This course provides the student with an understanding of techniques for sputum collection, lung function testing and blood gas analysis.

COURSE DESCRIPTIONS	Hours	Credits

4831 Clinical Medicine 48 4

Introduction to etiology, symptomology, diagnosis, therapeutics and prognosis of disease conditions related to respiratory therapy.

4832 Inhalation Therapy Applications II 60 5

A continuation of Inhalation Therapy Applications I (4122).

4833 Clinical Practicum II 240 5

A continuation of Clinical Practicum I (4823).

4840 Inhalation Therapy Applications III 60 5

A continuation of Inhalation Therapy Applications II (4832).

4841 Clinical Practicum III 360 8

A continuation of Clinical Practicum II (4833).

AGRICULTURAL EQUIPMENT TECHNOLOGY

Agricultural occupations afford many opportunities for excellent employment. Increased specialization and mechanization in agriculture have fostered new occupations. Today's farms are larger, more specialized, and produce a higher volume of produce than in the past. With this increased mechanization, the need for skilled technicians to fill positions in the manufacturing, selling and servicing of agricultural equipment and suburban garden equipment has increased.

The agricultural equipment technology program gives the student a thorough understanding of servicing, repairing and maintaining all types of agricultural equipment.

The student learns to operate, maintain and repair such basic farm machinery as plows, disks, harrows, and cultivators as well as the larger self-propelled and tractor-drawn equipment such as balers, combines and corn pickers.

Special emphasis is placed on developing an understanding of the effects on the environment of agricultural chemicals and sprays, and the maintenance and adjustment of chemical application equipment.

The student learns how to tune, adjust and repair various gasoline and diesel engines. He studies automatic transmission, air-conditioning, braking and steering systems on tractors and hydraulic systems and their application to farm machinery. Grain drying and other specialized temperature and moisture control systems are also included.

Employment opportunities may be found with agricultural equipment manufacturing firms, farm equipment sales and service organizations, elevators, farm supply firms and food processing industries.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

AGRICULTURAL EQUIPMENT TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
5110	Basic Gasoline Engines	120	6
5111	Introduction to Welding	60	3
5112	Farm Machinery I	120	6
		300	15

Career Opportunities: Farm Shop Welder, Small Engine Mechanic, Farm Equipment Shop Helper.

SECOND QUARTER		Hours	Credits
5120	Farm Machinery II	144	7
5121	Tractor Hydraulic Systems	96	5
5122	Electrical Equipment Fundamentals	60	4
		300	16

Career Opportunities: Farm Equipment Shop Mechanic, Tractor Hydraulics Mechanic.

THIRD QUARTER			
5130	Tractor Engines	180	8
5131	Suburban Garden Equipment	120	6
		300	14

Career Opportunities: Farm Equipment Field Mechanic, Suburban Garden Equipment Mechanic.

FOURTH QUARTER			
5140	Tractor Systems	180	8
5141	Agricultural Chemical Equipment	120	7
		300	15

Career Opportunities: Tractor Mechanic, Spraying Equipment Technician.

FIFTH QUARTER			
5150	Agricultural Diesels I	120	6
5151	Vehicular Air Conditioning	60	3
5152	Human Relations	60	4
5153	Environmental Control	60	4
		300	17

Career Opportunities: Air Conditioning Mechanic, Field Maintenance Technician, Tractor Service Representative, Basic Diesel Mechanic, Pollution Control Equipment Technician.

SIXTH QUARTER			
5160	Agricultural Diesels II	180	7
5161	Farm Service Organization and Management	60	5
5162	Agricultural Sales and Marketing	60	5
		300	17

Career Opportunities: Agricultural Equipment Technician, Diesel Engine Technician, Farm Equipment Salesman, Parts Counterman.

Total Contact Hours: 1,800
Total Credits: 94

COURSE DESCRIPTIONS — Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the agricultural industry.

COURSE DESCRIPTIONS Hours Credits

5110 Basic Gasoline Engines 120 6

A course in basic components of an engine. Emphasis is placed on how each component relates to the engine as a whole and how engines are utilized as power sources on farm machinery. Applied mathematics is also included.

5111 Introduction to Welding 60 3

This course is an introduction to the setup and use of gas welders for use in heating, cutting, tempering, welding, brazing and soldering and the arc welder for cutting and welding. Safety hazards and safe practices in gas and arc welding are emphasized.

5112 Farm Machinery I 120 6

This course is a study of the operating principles of simple farm implements including the selection, field operation, maintenance and repair of basic farm machinery such as plows, disks, harrows and cultivators. Basic mechanical principles of plows, planters, mowers, choppers, combines and other common farm machines, principles of safety and study of machinery economics are covered. Applied mathematics and communications skills are also included.

5120 Farm Machinery II 144 7

A course in selection, operation, adjustment and use of farm harvesting machines. Field operation is required to study performance of machines in terms of design, operating speeds and variations in adjustment. Careful integration of field and laboratory work is required to enable students to learn to use testing devices and to develop the ability to analyze machine performance. Applied mathematics and communications skills are also included.

5121 Tractor Hydraulic Systems 96 5

This course is a study of the principles of hydraulics and their application to farm machinery, including components of tractor hydraulic systems, testing maintenance and repair of hydraulic systems. It emphasizes laboratory study of hydraulic circuits, systems, power steering units and transmissions to identify and correct maladjustments.

5122 Electrical Equipment Fundamentals 60 4

Electrical fundamentals and their application to the various systems and components of farm machinery. Emphasis will be placed on the operation, installation and repair of electric motors, relays and control circuits used in agriculture.

5130 Tractor Engines 180 8

This course covers tractor gasoline engine operation including horsepower calculations, efficiency, combustion theory, types of engines, cylinder and valve arrangements, lubrication, fuel and cooling systems. Laboratory work consists of demonstration, disassembly, inspection and reassembly of various engines. Special emphasis is placed on tractor engine electrical systems, lubrication systems and lubricants, tuning and adjusting and troubleshooting. This is performed in conjunction with the latest diagnostic equipment.

5131 Suburban Garden Equipment 120 6

A course in the assembly and operation of the component parts of suburban farm and garden equipment into salable units, utilizing the manufacturer's operators set-up manual as a guide. Repair of such units in the field, in keeping with manufacturer's specifications and procedures is emphasized. Applied mathematics and communication skills are also included.

COURSE DESCRIPTIONS Hours Credits

5140 Tractor Systems 180 8

An intensive study of tractor power trains, transmission, power take-offs, steering systems, braking systems, cooling systems and chassis and suspension units. Applied mathematics and communications skills are also included.

5141 Agricultural Chemical Equipment 120 7

A course to provide the student with the knowledge and understanding needed to select, operate, adjust, service, maintain and repair equipment used in the application of agricultural chemicals. Applied mathematics and communications skills are also included.

5150 Agricultural Diesels I 120 6

Basic agricultural diesel engine principles and engine structure are studied. Also the relationship of parts, exhaust systems and thermodynamics of combustion. Although the course will be primarily a study of all diesel engines, emphasis will be placed on those particular points of interest pertaining to farm diesels. Applied mathematics and communications skills are also included.

5151 Vehicular Air-Conditioning 60 3

A study of both heating and cooling systems utilized on tractors and other self-propelled and enclosed vehicles. Includes the operation and maintenance of the refrigeration components and their connection to the vehicle engine. Special emphasis is placed on heating and cooling systems for non-vehicular applications, such as, grain dryers, milk storage, etc.

5152 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

5153 Environmental Control 60 4

A study of the methods and equipment used to monitor and control the pollution of air and water resulting from agricultural operations.

5160 Agricultural Diesels II 180 7

This is a lecture and laboratory course dealing with the disassembly and reassembly of diesel engines including the inspection, diagnosis, repair and final assembly and testing of these engines. It includes a study of diesel fuel and pump systems. Applied mathematics and communications skills are also included.

5161 Farm Service Organization and Management 60 5

This is a study of the principles, practices and procedures in efficient and profitable operation of parts and service departments of a farm equipment retail business, and a study of the bookkeeping required for such an enterprise.

5162 Agricultural Sales and Marketing 60 5

An introductory course in modern salesmanship techniques and procedures. It analyzes marketing and product services as they depend on the student's ability to use principles of salesmanship, verbal persuasion and sensitivity in person-to-person relationships.

ARCHITECTURAL DESIGN TECHNOLOGY

The architectural industry is in need of increasing numbers of well-prepared technicians to translate ideas to graphic and written form and to assist in rendering architectural services.

Architectural technicians perform many of the planning tasks necessary to communicate the architect's designs to the builder. Graduates will be competent draftsmen who will work directly with registered architects and other qualified technicians within the office in the preparation of complete and accurate working drawings, details and specifications. The technicians will be well informed on the building industry in general, the operation of an architect's office, building codes, methods and materials of construction, and contract documents. Upon gaining sufficient experience they may be involved in estimating, field observation and many other facets of architectural practice.

Students in this program will work both individually, and in teams, to develop working drawings for a wide range of structures from small residences to commercial and industrial buildings. Mechanical and electrical equipment, site planning, and cost estimating are important elements of the complete specifications to be developed for each building.

Special emphasis is placed on the emerging technology of modular structures and manufactured housing.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

ARCHITECTURAL DESIGN TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

		Hours	Credits
FIRST QUARTER			
5410	Technical Drafting I	120	6
5411	Physical Science	60	4
5412	Technical Mathematics I	60	5
		240	15
SECOND QUARTER			
5420	Technical Drafting II	120	7
5421	Applied Geometry	60	5
5422	Construction Materials	60	4
		240	16

Career Opportunities: Basic Draftsman.

THIRD QUARTER			
5430	Architectural Design I (Residential)	180	8
5431	Applied Trigonometry	24	2
5432	Mechanical and Electrical Equipment	36	3
		240	13

Career Opportunities: Mobile Homes Draftsman, Residential Draftsman.

FOURTH QUARTER			
5440	Architectural Design II (Commercial)	144	7
5441	Specifications and Codes	60	5
5442	Report Writing	36	3
		240	15

Career Opportunities: Commercial Draftsman Assistant, Specification Checker, Architectural Detailer.

FIFTH QUARTER			
5450	Architectural Design III (Institutional)	180	8
5451	Structural Design	36	3
5452	Estimating	24	2
		240	13

Career Opportunities: Institutional Draftsman, Architectural Estimator, Structural Design Draftsman.

SIXTH QUARTER			
5460	Architectural Design Team Project I	144	7
5461	Architectural Rendering	36	3
5462	Architectural Business Principles	60	5
		240	15

Career Opportunities: Basic Architectural Design Technician, Specification Writer, Construction Expeditor.

SEVENTH QUARTER			
5470	Architectural Design Team Project II	120	7
5471	Surveying and Measurements	60	4
5472	Human Relations	60	4
		240	15

Career Opportunities: Architectural Design Technician, Landscape Draftsman, Contractor's Field Representative, Surveying Technician.

Total Contact Hours: 1,680
Total Credits: 102

COURSE DESCRIPTIONS — Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the architectural drafting field.

5410 Technical Drafting I 120 6

This course covers the uses of drafting equipment, free hand lettering, shape description and free hand sketching. The importance of complete and accurate drawings is stressed.

5411 Physical Science 60 4

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.

5412 Technical Mathematics I 60 5

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

5420 Technical Drafting II 120 7

An intermediate course involving symbolisms and conventions, fits and allowances and drafting standards. Auxiliary views, isometric sketching and working drawings are covered. Proper use of instruments, use of arm and track drafting machines, blue printing, geometric constructions with emphasis on appropriate line weights and general drafting skill, multiview drawing, sketching, dimensioning, layout, introduction to vector construction and proceeding to simple working drawings.

5421 Applied Geometry 60 5

Applied geometry broadens the knowledge of techniques to use in solving problems involving spatial relationships of points, lines, surfaces, and solids. Auxiliary views, tru-size constructions, revolution, developments, cutting planes, graphical treatment of vectors, and classification of surfaces are included.

5422 Construction Materials 60 4

This course covers the basic architectural and structural construction materials and their applications. Building materials will be considered for usability and cost feasibility.

5430 Architectural Design I (Residential) 180 8

This course covers the planning and design of a residence including size, space relationships and costs. A complete set of working drawings shall be the objective.

5431 Applied Trigonometry 24 2

Trigonometry of right and oblique triangles, analytical trigonometry including vectors and equations.

5432 Mechanical and Electrical Equipment 36 3

A brief introduction to the mechanical and electrical systems in a structure. Plumbing, heating and cooling and electrical systems will be studied. Mechanical and electrical drawings will be studied. Applied mathematics is also included.

5440 Architectural Design II (Commercial) 144 7

This course covers the planning and design of a motel including size, space relationships and costs. A complete set of working drawings shall be the objective.

5441 Specifications and Codes 60 5

This course covers contracts and specifications as they relate to plans, building codes and actual construction. Basic relationships between specifications and working drawings will be considered from a legal and working standpoint. Applied mathematics and communication skills are also included.

5442 Report Writing 36 3

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

COURSE DESCRIPTIONS Hours Credits

5450 Architectural Design III (Institutional) 180 8

This course covers the planning and design of a school including size, space relationships and costs. A complete set of working drawings is the objective.

5451 Structural Design 36 3

This course covers statics and strength of materials. Vectors, stress, strain, and the elasticity of materials will be considered in the basic structural design problems. Also covers the properties of concrete and the placing of reinforcement and proportioning of concrete mixes. Design principles of beams, axially loaded columns, footrings and prestressed beams are followed by design work. Also discussed are retaining walls, eccentrically-loaded columns and slabs.

5452 Estimating 24 2

The student is introduced to basic estimating procedures as they apply to the architectural construction industry and methods of construction.

5460 Architectural Design Team Project I 144 7

In order to provide an atmosphere of "the world of work," teams of students complete a set of working drawings. A job captian is chosen from among the most deserving students. This design includes commercial or residential design as approved by the instructor.

5461 Architectural Rendering 36 3

Architectural rendering covers introduction, history and review of pictorial types of drawing, study of light and color, rendering media, and application of different techniques and media by practical exercises.

5462 Architectural Business Principles 60 5

A course covering fundamental economics and basic principles of business and industry. Special emphasis is placed on the economic and business principles involved in the building construction and architectural design fields, including architect-client relationships, architect-contractor relationships, and the operating finances of the architectural organization.

5470 Architectural Design Team Project II 120 7

In order to provide an atmosphere of "the world of work," teams of students complete a set of working drawings. A job captain is chosen from among the most deserving students. This design includes light industry or office building design as approved by the instructor.

5471 Surveying and Measurements 60 4

This course covers the proper use and care of basic surveying equipment, including the level and transit. Field problems will be recorded in field notebooks and translated into records and drawings. Applied mathematics and communication skills are also included.

5472 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

AUTOMOTIVE BODY REPAIR TECHNOLOGY

The field of automotive body repair and painting requires a large number of well-trained people to meet the growing demand for the many skills needed in this area of employment.

A skilled auto body technician needs a high level of manipulative ability to repair the damaged parts of an automobile to original condition. The job requires a high degree of physical dexterity in order to work with thin sheet metal panels and intricately shaped panels.

The areas of instruction include shrinking and stretching methods, alignment of body, hoods, deck lids, wheel alignment, and mixing and matching of paints. All of these lead to restoration of the complete automotive body to its original contour and finish. An area which receives much emphasis is gas welding, which in turn makes it possible to repair and restore the automotive body and frame.

Additional emphasis is placed on the increasingly important skills in fiber glass and plastic repair, as well as interior refinishing.

Many opportunities are available for the graduate who develops a high degree of skill, which may enable him to establish a business of his own or to obtain employment in an automotive dealership or automotive body establishment. This program leads to a technical certificate in Automotive Body Repair.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

AUTOMOTIVE BODY REPAIR TECHNOLOGY

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
5610	Basic Auto Body Repair	180	7
5611	Basic Welding	120	6
		300	13

Career Opportunities: Preparation Man, Masker, Auto-Body Helper.

SECOND QUARTER			
5620	Automotive Body Welding	120	5
5621	Body and Chassis Alignment	120	6
5622	General Automotive Mechanics	60	4
		300	15

Career Opportunities: Basic Welder, Salvage Worker, Front-end Repair Mechanic.

THIRD QUARTER		Hours	Credits
5630	Collision Damage Repair	180	7
5631	Automotive Paint Shop Practices	120	6
		300	13

Career Opportunities: Frame and Chassis Mechanic, Paint Touch-up Man, Paint Shop Assistant.

FOURTH QUARTER			
5640	Automotive Body Shop Practices	120	6
5641	Fiberglass and Plastic Repairs	120	6
5642	Human Relations	60	4
		300	16

Career Opportunities: Auto-Body Repair Technician, Body Shop Estimator, Insurance Estimator, Top and Interior Technician.

Total Contact Hours: 1,200
Total Credits: 57

COURSE DESCRIPTIONS — Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the auto body repair industry.

5610 Basic Auto Body Repair 180 7

An introduction to automotive body repair and refinishing. The construction of the auto body, minor dent damage repair and refinishing, hand and portable power tools and safety are emphasized. Applied mathematics and communications skills are also included.

5611 Basic Welding 120 6

This course is an introduction to the setup and use of gas welders for use in heating, cutting, tempering, welding, brazing and soldering and the arc welder for cutting and welding. Safety hazards and safe practices in gas and arc welding are emphasized.

5620 Automotive Body Welding 120 5

The application of basic welding techniques in the replacement and repair of panels is covered. Techniques peculiar to automotive body repair are also covered.

5621 Body and Chassis Alignment 120 6

This course covers the alignment of body panels for proper fit. It also covers the measurement of chassis alignment in the areas of the front suspension, rear axle and frame and the correction of misalignments. Applied mathematics and communications skills are also included.

5622 General Automotive Mechanics 60 4

A general study of the major components of the modern automobile. Particular emphasis is placed on power trains, steering systems, cooling systems, exhaust systems, fuel systems and chassis safety devices.

COURSE DESCRIPTIONS Hours Credits

5630 Collision Damage Repair 180 7

Repair of extensive automotive body damage is covered. The replacement of major body panels is also taught. An introduction to frame straightening is covered. Also covered is a knowledge of basic electricity and automotive wiring systems. Learn proper procedures and precautions for replacing electrical components. Applied mathematics and communications skills are also included.

5631 Automotive Paint Shop Practices 120 6

Develop skills of auto body repair in the areas of wet sanding, color mixing, blending, spraying and template layout. Speed and skill are developed in the automotive refinishing processes. Special techniques and problems encountered in automotive refinishing are emphasized.

5640 Automotive Body Shop Practices 120 6

Speed and skill are developed in the repair of minor collision damage. Special techniques used in the body shop are emphasized. Stress is placed on the ability to visually estimate the cost of repair to a damaged vehicle. Emphasis placed on the use of estimating guides, procedures for itemizing damage, interpreting abbreviations, part numbers, and conversion tables for time and money. Applied mathematics and communications skills are also included.

COURSE DESCRIPTIONS Hours Credits

5641 Fiberglass and Plastic Repairs 120 6

Basic techniques of automobile interior refinishing, along with a study of spring construction, fillings and fabrics. Developing the manipulative skills necessary through the practice of various projects on seats, panels and arm rests. Special emphasis is placed on the repair and finishing of exterior fiberglass panels and components.

5642 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

AUTOMOTIVE SERVICE TECHNOLOGY

The automotive mechanic is a highly skilled, well-paid, respected worker whose services are always in demand and who is extremely important to the national economy. As a result of society's great dependence on automobiles for transportation and because today's cars are highly developed, automobiles must be serviced regularly.

The student is given thorough preparation in every aspect of automotive maintenance and repair, including wheel alignment and balance, carburetion, ignition, tune-up procedures, brakes, and front suspension. He learns about all types of current internal combustion engines and vehicular equipment, including air conditioning, automatic transmissions, and the recently developed emission control and safety systems.

Special emphasis is placed on the increasing use of solid-state electronics and electrical controls in many of the systems of the modern automobile.

Vehicle mechanics make up the largest service and repair group in the United States. Wages are good and opportunities are excellent for the person who is anxious to learn and willing to work.

For many graduates, a job as an auto mechanic becomes a stepping stone to greater responsibility such as service manager. Good mechanics who are well grounded in business practices may own their own shop and have other mechanics work for them.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

AUTOMOTIVE SERVICE TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
5810	Automotive Frame and Chassis Units	180	7
5811	Basic Mechanics and Hydraulics	120	6
		300	13

Career Opportunities: Exhaust System Installer, Alignment Mechanic, Brake System Mechanic.

SECOND QUARTER			
5820	Automotive Engines	180	7
5821	Automotive Electrical and Ignition Systems	120	6
		300	13

Career Opportunities: Auto Ignition System Mechanic, Service Station Assistant, Basic Engine Mechanic.

THIRD QUARTER		Hours	Credits
5830	Automotive Power Trains	180	7
5831	Engine Fuel and Carburetion Systems	84	5
5832	Vehicle Inspection and Safety	36	3
		300	15

Career Opportunities: Carburetor Mechanic, Safety Inspection Technician, Lubrication Technician, Wheel and Bearing Mechanic.

FOURTH QUARTER			
5840	Automatic Transmissions I	144	6
5841	Automotive Air Conditioning	96	5
5842	Automotive Parts Handling	60	4
		300	15

Career Opportunities: Auto Air-Conditioning Mechanic, Auto Parts Counterman.

FIFTH QUARTER			
5850	Automatic Transmissions II	144	6
5851	Automotive Accessories	96	5
5852	Technical Communications	60	5
		300	16

Career Opportunities: Transmission Mechanic, Auto Accessories Salesman, Auto Accessories Mechanic, Auto Accessories Installer.

SIXTH QUARTER			
5860	Advanced Electrical Systems	180	7
5861	Automotive Emission Control Systems	60	4
5862	Technical Mathematics II	60	5
		300	16

Career Opportunities: Emission Control Technician, Electrical Systems Technician, Parts Manufacturer's Representative.

SEVENTH QUARTER			
5870	Advanced Auto Diagnosis and Tune-up	180	7
5871	Service Organization and Management	60	5
5872	Human Relations	60	4
		300	16

Career Opportunities: Automotive Service Technician, Service Station Operator, Auto Service Estimator, Parts Department Operator, Tune-up Technician.

Total Contact Hours: 2,100
Total Credits: 104

COURSE DESCRIPTIONS — Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The em-

phasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the automotive industry.

5810 Automotive Frame and Chassis Units 180 7

A basic study of the automobile including economic and social impact, frame designs, wheel balance and alignment, steering geometry, exhaust systems, and suspension systems. Also includes principles of braking on currently used automotive systems. Hydraulic braking principles will be covered along with testing, diagnosing, maintaining and repairing brake systems. Applied mathematics and communications skills are integrated into the subjects covered.

5811 Basic Mechanics and Hydraulics 120 6

This course covers the use of cams, gears, bearings, pawl and ratchets, linkages and drive trains producing rotary, reciprocating or oscillating motion. Also studied are the various systems of measurement, the behavior of molecules, force and motion, power and energy, simple and compound machines, fluid power, and heat and thermometry. Applied mathematics is also included.

5820 Automotive Engines 180 7

This course is designed to familiarize students with tools, machines and equipment needed for the rebuilding of the automotive internal combustion engine. Theory, construction, design, diagnosis, disassembly, repairing, testing and reassembly are stressed throughout the course. Emphasis is placed on work skills and proficiency throughout the laboratory practices. Non-reciprocating automotive engines are also introduced and discussed. Applied mathematics and communications skills are also included.

5821 Automotive Electrical and Ignition Systems 120 6

Instruction is offered in the construction, function and principles of operation of the electrical units of the automobile, including units such as batteries, starting motors, generators, alternators, charging systems, regulators, conventional and transistorized ignition systems. Emphasis is placed on developing a comprehensive understanding of all electrical components and systems with special emphasis on the diagnosis, correction and testing of ignition systems.

5830 Automotive Power Trains 180 7

The theory, operation, repair and troubleshooting of the power train of vehicles as it leaves the engine and is delivered at the wheels is studied. Operation and maintenance of transmissions — regular, auxiliary unit, overdrives; differentials — semi, three-quarter and full floating. Checking, disassembly and replacement of bearings and wheel assemblies. Emphasis is placed on an understanding of the various types of lubricants and their application to the modern automobile.

5831 Engine Fuel and Carburetion Systems 84 5

An intensive study of automotive fuels and carburetion systems, including single acting and double acting fuel pumps. Single, double and four-barrel carburetors and study of all carburetor circuits, gasoline fuel injection systems. Emission control is introduced, but only as it applies to carburetion. Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the fuel and emission systems of the automobile causing air pollutants. There is also troubleshooting of the fuel and emission systems, providing a full range of testing, adjusting, repairing and replacing experiences.

5832 Vehicle Inspection and Safety 36 3

A study of the various federal and state regulations concerning automotive safety devices and their proper operation. Special

emphasis is placed on the techniques of overall vehicle inspection to determine compliance with existing federal and state laws. Applied mathematics and communications skills are also included.

5840 Automatic Transmissions I 144 6

A lecture-laboratory course in automatic transmissions which includes construction, function, principles of operation of the various types of automatic transmissions, and their component units. The laboratory exercises will be conducted on laboratory equipment and dead transmissions. Applied mathematics and communications skills are also included.

5841 Automotive Air Conditioning 96 5

An intensive study of automotive air conditioning, including both heating and cooling. Special emphasis is placed on the operation and troubleshooting of the air conditioning refrigeration system and its components. Vacuum and electrical control systems are also included.

5842 Automotive Parts Handling 60 4

This is a study of the principles, practices and procedures in efficient and profitable operation of parts departments. Special emphasis is placed on understanding and interpreting manufacturers' catalogs and component reference numbering systems, as well as the techniques for installing and maintaining a practical inventory control system for automotive parts. Applied mathematics and communications skills are also included.

5850 Automatic Transmissions II 144 6

Understanding of automotive automatic transmission application, operation and maintenance. Components such as planetary gears, clutches, controls and valve bodies will be studied. Theory and practical work includes diagnosis, correction and testing of malfunctions on dead and live transmissions and their components.

5851 Automotive Accessories 96 5

Basic study of the function, construction, principles of operation and troubleshooting techniques for the varied accessories of automotive vehicles, to include windshield washers and wipers, power seats, power windows, adjustable steering wheels, power tailgates, headlight enclosures, speedometers, etc.

5852 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

5860 Advanced Electrical Systems 180 7

Further study of electrical and electronic principles and applications, with special emphasis on relays and DC motors. Specific automotive applications include: installation of radios, antennas, speaker systems, and transistor ignition systems; operation and maintenance of lighting and signalling systems, headlight dimmers, electrically operated safety devices, buzzers, flashers, and electric motor operated devices.

5861 Automotive Emission Control Systems 60 4

A study of operation and maintenance of the various devices utilized in the modern automobile to control the emission of air pollutants. Includes positive crankcase ventilation, special exhaust systems, charcoal filters, special carburetion controls, special timing systems and exhaust gas re-entrant techniques.

COURSE DESCRIPTIONS Hours Credits

5862 Technical Mathematics II 60 5

A continuation of algebra with emphasis on scientific notation, powers and roots. Also includes geometry and basic trigonometry.

5870 Advanced Auto Diagnosis and Tune-up 180 7

An advanced course to familiarize students with the importance and necessity of troubleshooting and pin-point diagnostic procedures. It is designed to pull together previously studied courses. Special emphasis is placed on the operational principles of the automotive engine and the components that support good performance are studied. The laboratory is used for diagnosis and evaluation. The principles objective being the complete tune-up of the automotive system as closely as possible back to its original new condition according to manufacturers' recommendations and specifications.

COURSE DESCRIPTIONS Hours Credits

5871 Service Organization and Management 60 5

A study of the methods of work and time scheduling in the service shop, and the techniques of obtaining maximum work efficiency from a group of mechanics and specialists. The general principles of service station sales, service, and customer relations are also included.

5872 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working.

This program deals with light construction, with particular emphasis on practical experience in residential work. It is especially designed for those who desire to enter the small builders field as contractors or jobbers, after gaining some practical experience.

Skill is developed in wood, concrete and masonry construction. This includes the proper use of tools and woodworking machinery, house framing, use of steel square, millwork, stair building and the hanging of sash and doors. Reinforced concrete construction, form building, foundations, bricklaying, plastering, flooring, and roof flashing are also covered in a practical manner. Basic plumbing, heating and electrical wiring are included.

Special emphasis is placed on such related skills as blueprint reading, basic architectural drawing, surveying and estimating. Modular production techniques are also introduced.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

BUILDING CONSTRUCTION TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
6010	Fundamentals of Carpentry	144	7
6011	Fundamentals of Plumbing	96	4
6012	Blueprint Reading I	60	5
		300	16

Career Opportunities: Construction Helper, Plumber Helper.

SECOND QUARTER			
6020	Rough Framing and Exterior Finishing	180	8
6021	Blueprint Reading II	60	4
6022	Electrical Wiring Fundamentals	60	4
		300	16

Career Opportunities: Rough-in Trainee, Roofing Assistant, Insulation Installer, Electrician Helper.

THIRD QUARTER			
6030	Interior Trim and Finishing	120	6
6031	Fundamentals of Concrete and Masonry	120	6
6032	Technical Communications	60	5
		300	17

Career Opportunities: Interior Trim Assistant, Mill Worker, Form Builder.

BUILDING CONSTRUCTION TECHNOLOGY

FOURTH QUARTER		Hours	Credits
6040	Sheet Metal and Steel Construction	120	6
6041	Architectural Drawing	120	6
6042	Surveying and Measurements	60	4
		300	16

Career Opportunities: Maintenance Trainee, Site Surveyor, Sheet Metal Assistant.

FIFTH QUARTER			
6050	Mechanical and Electrical Installation	120	6
6051	Estimating and Specifications	120	6
6052	Basic Welding Fundamentals	60	3
		300	15

Career Opportunities: Plumber Trainee, Maintenance Plumber, Form Welder Trainee.

SIXTH QUARTER			
6060	Modular Production Techniques	120	6
6061	Construction Business Principles	120	6
6062	Human Relations	60	4
		300	16

Career Opportunities: Building Construction Technician, Assistant Construction Foreman, Manufacturer's Representative, General Maintenance Technician, Site Foreman.

Total Contact Hours: 1,800
Total Credits: 96

COURSE DESCRIPTIONS

Skills Advancement Units — Hours: —, Credits: —

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the building construction industry.

6010 Fundamentals of Carpentry — Hours: 144, Credits: 7

This course covers a brief history of carpentry and present trends of the construction industry. Operation, care and use of carpenters' hand tools and power tools in cutting, shaping, and joining construction materials used by the carpenter is emphasized.

6011 Fundamentals of Plumbing — Hours: 96, Credits: 4

This course is designed to introduce students to a brief history of plumbing, the tools, fittings and small equipment used by plumbers and the methods and techniques of properly mating plumbing materials including operations such as threading, cutting, caulking, and sweating the varied types of pipe and tubing used in plumbing. Applied mathematics and communications skills are also included.

6012 Blueprint Reading I — Hours: 60, Credits: 5

Instruction and practice in the study of working drawings and application of understandings from the "print" to the "work." Typical units will include the relationship of views and details, interpretation of dimensions, transposing scale, tolerances, electrical symbols, sections, material symbols, material lists, architectural plates, room schedules and plot plans.

6020 Rough Framing and Exterior Finishing 180 8

Instruction is given in the principles and practices of frame construction, including foundation sites, floor joists, studs, rafters, plates, bridging, bracing, sheathing, sub-flooring and interior wall partitions. Roof construction is covered, including layout and construction methods of common types of roofs using standard rafter construction, truss construction, and post and beam construction. Application and selection of sheathing and roofing is included. Applied mathematics and communications skills are also included.

6021 Blueprint Reading II 60 4

This course is designed to develop proficiencies in the interpretation of more complex blueprints including notations, conventional symbols and dimensions. Special emphasis is placed on developing basic mechanical drafting skills. Also includes an understanding of building codes and their interpretation.

6022 Electrical Wiring Fundamentals 60 4

This course covers basic electrical theory, electrical codes and symbols, installation of electrical service, metering equipment, lighting, switches, outlets, heating control systems, remote controls and other electrical components common to residential wiring, installation and maintenance.

6030 Interior Trim and Finishing 120 6

This course covers interior trim, including door and window trim and facing. Interior flooring, molding, cornice construction, installation of hardware, installation of built-in equipment and cabinets. The installation of and maintenance of hot and cold water distribution systems, heating device systems, private and public sewage and drainage systems and ventilation for single and multilevel dwellings will be covered. Also covers the technique of mill work and the selection and grading of lumber.

6031 Fundamentals of Concrete and Masonry 120 6

This course covers materials and methods of construction, building layout, preparation of building site, footings and foundation, wall construction, to include form construction and erection. Special emphasis is placed on the study of basic tools and materials used in the masonry field, physical properties of brick, structural tile, concrete block. Solid brick walls, corners, isolated piers and pilasters will be constructed. Construction of masonry walls including corners for English, Flemish, and Dutch bonds. Applied mathematics and communications skills are also included.

6032 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

6040 Sheet Metal and Steel Construction 120 6

The student is given basic structural steel design problems after he has been exposed to the theories, terminology and codes applicable to the problem. Practice in detailing structural steel, and information concerning fabrication and erection of structural steel are covered. Special emphasis is placed on aluminum siding and other aluminum panels used in building construction. Geometry and algebra are integrated into the subject areas on an applied basis.

6041 Architectural Drawing 120 6

This course covers the uses of drafting equipment, free hand lettering, shape description and free hand sketching. The importance of complete and accurate drawings is stressed. Special emphasis is placed on the basic fundamentals of architectural drawing as the use of standard practices in sectioning, detailing, lettering, dimensioning, symbols, plan work and elevations.

6042 Surveying and Measurements 60 4

Instruction in the use of the instruments used in the field of construction surveying such as the transit, level, and chains. Their use and application in the solving of typical field problems is studied and the field work and office computations required in the solution of level nets and transverses.

6050 Mechanical and Electrical Installation 120 6

The operation of mechanical equipment in the air conditioning field, and installation of systems using this equipment, installation of complete air conditioning systems, including heating, cooling, humidification and air cleaning are studied. Heat losses and heat gains are discussed in order to familiarize the student with accepted practices used in selecting air conditioning equipment. Various types of automatic fuel burning devices as well as comparable fuel heating costs are also studied. Consideration is given to the coordination of carpentry work with installation of mechanical equipment such as: electrical, air conditioning, heating and plumbing.

6051 Estimating and Specifications 120 6

A study of building plans and specifications, how to make take-offs and compile quantity surveys, study of current pay wages in the building field are covered as well as the comparison of cost of building materials and labor involved in erecting such materials. The course also includes a study of the various materials used in construction, their sources, methods of delivery, techniques of storage and inventory control. Designed to coordinate the various procedures covered in the building construction courses in carpentry, masonry, electrical and heating, the course will also enable the student to coordinate the work of the various trades. Various construction equipment and their operation are also studied.

6052 Basic Welding Fundamentals 60 3

This course is an introduction to the setup and use of gas welders for use in heating, cutting, tempering, welding, brazing and soldering and the arc welder for cutting and welding. Safety hazards and safe practices in gas and arc welding are emphasized.

6060 Modular Production Techniques 120 6

An intensive study of pre-fabricated and pre-cut building techniques is made with special emphasis on production line assembly of complete building assemblies, particularly as applied to mobile homes and recreation vehicles. The course also includes a study of strength of materials and materials selection technique.

6061 Construction Business Principles 120 6

This course stresses the fundamental business operations and their application to construction problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, etc. The various types of working agreements, offers to purchase, contracts, and specifications are analyzed and their functions illustrated. Specifications covering various materials and methods of construction are studied. Special emphasis is placed on the O.S.H.A. regulations as they apply to the building industry.

6062 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

DIESEL POWER TECHNOLOGY

Because of economy of operation and comparatively low maintenance costs, the application of diesel power to both stationary and mobile installations has made great progress. There is an increasing demand for diesel technicians with skills in testing, servicing, and maintaining this type of equipment. The operation of large truck depots, company-owned operation centers, and expansion of highway building with large earth-moving equipment have opened vast numbers of jobs for diesel mechanics.

The diesel mechanic diagnoses and corrects mechanical faults in vehicles; cars, trucks, buses, and in some communities, tractors, marine engines and other equipment.

The graduate of this program is able to determine the causes of faulty operation and to repair and replace defective parts to restore the vehicle to proper operating condition. He is able to identify, dismantle, adjust, repair, replace and reassemble the various parts of the engine.

The graduate will know how to care for and safely use the basic tools and testing equipment associated with diesel repair and also be able to follow specifications and instructional manuals and use shop manuals and other technical publications.

The program also includes basic welding techniques, fluid power fundamentals, and emission control systems.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

DIESEL POWER TECHNOLOGY
Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
6210	Basic Welding Techniques	120	6
6211	Basic Mechanics and Electricity	120	8
		240	14

Career Opportunities: Basic Welder, Flame Cutter.

SECOND QUARTER			
6220	Fundamentals of Diesel Engines	120	7
6221	Diesel Engine Electrical Systems	120	7
		240	14

Career Opportunities: Diesel Ignition Mechanic, Basic Diesel Engine Mechanic, Diesel Engine Tester.

THIRD QUARTER			
6230	Diesel Pumps and Fuel Systems	120	7
6231	Fluid Power Fundamentals	60	5
6232	Machine Shop Processes	60	4
		240	16

Career Opportunities: Diesel Pump Mechanic, Fuel Injection Mechanic.

FOURTH QUARTER			
6240	Diesel Engine Troubleshooting	120	7
6241	Stationary and Marine Applications	60	4
6242	Technical Communications	60	5
		240	16

Career Opportunities: Diesel Tune-up Mechanic, Diesel Power Mechanic, Marine Diesel Mechanic.

FIFTH QUARTER			
6250	Diesel Emission Control Systems	60	4
6251	Vehicular Applications	60	4
6252	Service Organization and Management	60	5
6253	Human Relations	60	4
		240	17

Career Opportunities: Emission Control Technician, Bus Diesel Mechanic, Truck Diesel Mechanic, Parts and Service Technician.

Total Contact Hours: 1,200
Total Credits: 77

COURSE DESCRIPTIONS

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the diesel power industry.

6210 Basic Welding Techniques — 120 hours, 6 credits

This course is an introduction to the setup and use of gas welders for use in heating, cutting, tempering, welding, brazing and soldering and the arc welder for cutting and welding. Safety hazards and safe practices in gas and arc welding are emphasized.

6211 Basic Mechanics and Electricity — 120 hours, 8 credits

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power; the concepts of magnetism and electrostatics, basic electric circuits, sources and effects of electric current, electromagnetic induction, alternating currents, generators and motors and the production and distribution of electric power. Applied mathematics is also included.

6220 Fundamentals of Diesel Engines — 120 hours, 7 credits

This course covers 2 and 4-cycle diesel engines to include construction and principles of operation. Valves, sleeves, and

gearings are covered in detail. Laboratory work will cover rebuilding a diesel engine. Applied mathematics and communications skills are also included.

6221 Diesel Engine Electrical Systems 120 7

This course covers diesel ignition systems, starting systems, generators and alternators. Laboratory work covers work on diesel engines as relates to the respective systems. Applied mathematics and communications skills are also included.

6230 Diesel Pumps and Fuel Systems 120 7

This course covers diesel super and turbo chargers, governors, cooling systems and fuel injectors. Laboratory work covers work on diesel engines as relates to the respective systems. Applied mathematics and communications skills are also included.

6231 Fluid Power Fundamentals 60 5

This course covers fundamentals of fluid power including principles, functions, terminology and symbols of hydraulics and pneumatics. Special emphasis on the understanding of basic hydraulic principles and equipment. Development of hydraulics, advantages and problems in hydraulics setups, physical properties of liquids. Principles of operation and the constructional features of hydraulic pumps, motors, and valves and the types and uses of seals, packing and tubing. Applications of hydraulic components in typical circuits and to industrial equipment.

6232 Machine Shop Processes 60 4

Benchwork, sawing, filing, layout, drilling, reaming, and care and use of basic tools and measuring instruments related to the diesel shop.

6240 Diesel Engine Troubleshooting 120 7

This course covers diagnosis and correction of malfunctions of domestic diesel engines and includes practice on live engines.

6241 Stationary and Marine Applications 60 4

A study of the special requirements and techniques used in operating diesel engines in stationary and marine applications.

COURSE DESCRIPTIONS Hours Credits

Special emphasis is placed on precise speed regulation, special breathing and cooling problems.

6242 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

6250 Diesel Emission Control Systems 60 4

A study of the causes and composition of pollutants produced by the diesel engine, their effective control, and measurement.

6251 Vehicular Applications 60 4

A study of the special requirements and techniques used in operating diesel engines in large trucks, locomotives, and heavy equipment. Special emphasis is placed on starting methods, governors, special breathing and cooling problems, and methods of power transfer and coupling to accessories.

6252 Service Organization and Management 60 5

A study of the methods of work and time scheduling in the service shop and the techniques of obtaining maximum work efficiency from a group of mechanics and specialists. The basic fundamentals of parts handling will be covered. Emphasis is placed on use of parts catalogs and parts department procedures. Applied mathematics and communications skills are also included.

6253 Human Relations 60 4

In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and personal morale in working situations.

ELECTRONICS COMMUNICATIONS TECHNOLOGY

The field of electronics communications is vast, and the need for trained men and women to operate, maintain, research and construct communications equipment is becoming more critical each year.

The field includes television, radio, radar, sonar, computers, spacecraft guidance, and control instruments. Electronic technicians work with engineers and scientists and do complex technical work.

This seven-quarter program provides an optional sequence of courses in the first four quarters for those students who wish to specialize in Radio and TV servicing instead of general communications electronics. Students may enter the last three quarters of this program from either option.

A skilled radio and television repairman uses his technical knowledge of electrical and electronic parts and circuits to install and repair many types of consumer electronics products. In addition to radio and TV sets, this may also include other electronic products such as phonographs, hi-fidelity and stereophonic sound equipment, intercommunication equipment, tape recorders, and public address systems.

Most of his work involves diagnosing trouble in the equipment and making the necessary repairs and adjustments. He checks and evaluates each possible cause of trouble, conducts routine checks and uses electronic testing equipment to check suspected circuits.

Those technicians engaged in consumer electronics servicing in Indiana, must obtain a state license. The four-quarter Radio and TV option in this program is specifically designed to equip the student with the knowledge and skills required for the state license examination. The remainder of the program is similarly designed to prepare the student to take both the 2nd class and 1st class FCC Radiotelephone license examinations.

Employment opportunities in the field of electronics are expanding rapidly. Opportunities can be found in industry, the service trades, utilities companies, communications, and federal, state and local government agencies.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

ELECTRONICS COMMUNICATIONS TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
6410	Fundamental Electronics I	180	9
6411	Heat, Light and Sound	60	4
		240	13

Career Opportunities: Basic Electronics Assembler.

SECOND QUARTER			
6420	Fundamental Electronics II		
	or		
6421	Radio and TV I	120	7
6422	Troubleshooting Techniques I	60	3
6423	Electronics Mathematics	60	5
		240	15

Career Opportunities: Basic Radio Repairman, Antenna Installation Helper (State License Level), Component Tester.

THIRD QUARTER			
6430	Electronics Circuits I		
	or		
6431	Radio and TV II	120	7
6432	Troubleshooting Techniques II	60	3
6433	Integrated Circuits and Semiconductors	60	4
		240	14

Career Opportunities: Radio-TV Troubleshooter Trainee, Production Repairman, Radio Service Technician Trainee (State License Level).

FOURTH QUARTER			
6440	Electronics Circuits II		
	or		
6441	Radio and TV III	144	8
6442	Magnetic Recording Systems	60	4
6443	Professional Standards	36	3
		240	15

Career Opportunities: Sound Equipment Technician, Radio-TV Technician (State License Level), Test Equipment Maintenance Technician.

FIFTH QUARTER			
6450	Electronics Circuits III	120	7
6451	Basic Industrial Electronics	60	3
6452	Technical Reporting	60	4
		240	14

Career Opportunities: Communications Technician (2nd Class FCC Level), Two-Way Radio Technician, Component Sales Representative.

SIXTH QUARTER			
6460	Data Communications	180	9
6461	Human Relations	60	4
		240	13

Career Opportunities: Advanced Communications Technician (1st Class FCC Level), Microwave Equipment Technician, Technical Writer.

SEVENTH QUARTER		Hours	Credits
6470	Digital Circuits and Equipment	120	7
6471	Quality Control	60	4
6472	Industrial Economics	60	4
		240	15

Career Opportunities: Quality Control Technician, Communications Engineering Technician, Manufacturer's Representative.

Total Contact Hours: 1,680
Total Credits: 99

COURSE DESCRIPTIONS — Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the electronics industry.

6410 Fundamental Electronics I 180 9

A study to provide a working knowledge of electrical principles and laws in DC and AC circuits. Voltage, current and resistance relationships are stressed on an applied basis. Applied mathematics and the practical use of the slide rule are included. Impedance, reactance and phase relationships are stressed on an applied basis. Lab work includes practical experience in constructing circuits from diagrams. Component identification and proper use of lab test equipment is stressed heavily.

6411 Heat, Light and Sound 60 4

An introduction to physics and its applications to the propagation of light and sound; the production, conduction and effects of heat; and their applications to electrical circuits.

6420 Fundamental Electronics II 120 7

A study of resonance, filters, vacuum tubes, transistors and their relationships to audio and radio frequency amplifiers and oscillators, as well as power supplies. Applied mathematics is also included. Laboratory work emphasizes the practical application of electronics theory in construction, testing and analysis of AC circuits, power supplies and vacuum tube and transistor amplifiers.

6421 Radio and TV I 120 7

A study of solid-state theory, characteristics, and applications. Includes the study of both solid-state and vacuum tube, radio receivers, and audio amplifiers. Special emphasis is placed on AM and FM radio receiver principles and circuits. Includes a working knowledge of field effect transistors and multiplex stereo circuitry. Lab work includes the practical application of theory principles to the operation of a complete superheterodyne receiver. Further experience is gained in the proper use of shop test equipment.

6422 Troubleshooting Techniques I 60 3

The techniques of logical troubleshooting of electronic circuits and simple systems will be studied. Emphasis will be placed on signal tracing and signal injection methods. Communications skills are also included.

6423 Electronics Mathematics 60 5

The application of algebra to electronics equations, formulas and graphs, with special emphasis placed on impedance and resonance calculations.

COURSE DESCRIPTIONS — Hours Credits

6430 Electronics Circuits I 120 7

Includes the principles of modulation, receiver principles, the superheterodyne receiver, receiver circuits, FM stereo and multiplex, test equipment and the study of television principles. Laboratory work includes the construction and testing of AF and RF amplifiers, vacuum tube and transistor radio receiver circuitry and a beginning study of television receiver circuits. Applied mathematics and communications skills are also included.

6431 Radio and TV II 120 7

An in-depth study of practical television circuitry as applied to vacuum tube monochrome receivers. Includes the principles of cathode ray tubes, scanning and synchronizing methods, and video amplification. Includes the principles of antennas and transmission lines. Lab work includes a hands-on analysis of operating television receivers, and the development of proper troubleshooting techniques. Applied mathematics and communication skills are included.

6432 Troubleshooting Techniques II 60 3

A background in techniques of solving electronic problems. Applications and calibration techniques of electronic circuits, solution of electronic problems, and proper use of test equipment. Communication skills are included.

6433 Integrated Circuits and Semiconductors 60 4

An introduction to the theory and operation of semiconductor devices other than the bipolar transistor. Topics to be covered include Zener and tunnel diodes, photo electric devices, PNPN transistors, junction transistors, FET's and other special semiconductor devices. Also includes an introduction to the various classifications and categorizations of integrated circuits. Additionally, methods and techniques of integrated circuits packaging, and representative application and operation of integrated circuits will be covered.

6440 Electronics Circuits II 144 8

An intensive study of the effects of RLC circuits and transistor and vacuum tube circuits on square waves, sinusoidal waveforms and other pulses. Includes a stage-by-stage analysis of a modern laboratory oscilloscope as representative of many pulse circuit techniques. Also includes a general study of test equipment repair and maintenance.

6441 Radio and TV III 144 8

A specialized study of the principles and circuits used in solid-state and color television receivers, emphasizing both the differences and similarities between these circuits and those previously studied. Lab work includes practical experience with both transistor and color TV receivers, with emphasis on service procedures and installation and adjustment of color receivers.

6442 Magnetic Recording Systems 60 4

Operational principles of both audio and video tape recording systems will be covered. Maintenance, alignment and operation will be stressed. Mechanical troubleshooting will be introduced. Special emphasis is placed on cassette and cartridge systems. Applied mathematics is also included.

6443 Professional Standards 36 3

The course is an in-depth study of those elements a technician should know to become a certified technician. Special emphasis is placed on the techniques and procedures for proper servicing required for successful completion of the state license examinations. Additional emphasis is placed on oral communications skills and technical writings.

COURSE DESCRIPTIONS	Hours	Credits

6450 Electronics Circuits III 120 7

Covers properties and propagation of radio waves, tuning circuits, AM and FM receivers, modulators and oscillators, receiver and transmitter alignment techniques television systems, and an introduction to microwaves. Special emphasis is placed on the circuits and principles required for successful completion of the FCC second class license examination. Applied mathematics is also included.

6451 Basic Industrial Electronics 60 3

An examination of industrial relay circuits, electronic power supplied including power rectification, motor control, saturable core devices and servomechanisms. Analysis of the operating characteristics of representative industrial control circuits.

6452 Technical Reporting 60 4

Skills for critical examination of electronics data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials, graphs, diagrams, and circuit specifications. Oral communication is also stressed.

6460 Data Communications 180 9

An examination of the use of both radio and landlines for the transmission of digital pulses and other data to remote locations. Includes waveguides, generation and propagation of microwave signals and applications of microwaves in radar and communications.

COURSE DESCRIPTIONS	Hours	Credits

6461 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

6470 Digital Circuits and Equipment 120 7

This course provides the student with a basic understanding of digital circuits and systems. Topics covered include logic circuits, binary numbers, octal numbers, binary codes, and Boolean algebra with special emphasis on digital control of communications equipment.

6471 Quality Control 60 4

This course covers the principles and techniques of quality control. Topics covered include vender-customer relationships, sampling inspections, process control and tests for significance. Special emphasis is placed on the use of test equipment to determine component parameters.

6472 Industrial Economics 60 4

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

ELECTRONICS TECHNOLOGY

The space industry and a rapidly developing industrial society, with its resulting emphasis on automation, brings job opportunities for people who are well-grounded in electrical and electronic theory and who have knowledge of manufacturing, installing, operating and maintaining electrical and electronic equipment. The electrical technician works with many types of electrical controls and machines. Electronic technicians work with some of the above equipment as well as telemetry, microwave and guidance systems, computers and specialized electronic equipment used in medicine.

This seven-quarter program provides an optional sequence of courses in the first three quarters for those students who wish to specialize in industrial electricity and commercial wiring. Students may enter the last four quarters of the program from either option.

All industrial plants need craftsmen who can service electrical equipment and machinery. A large part of the plant electrician's work is preventive. He periodically inspects equipment to find and repair defects before breakdowns occur. When trouble does develop, he repairs the faulty circuit or equipment so that production can continue. His duties include replacing wiring, fuses, circuit breakers, coils and switches. He also may do some installation work.

In large plants, an electrician may be responsible for the maintenance of a particular type of equipment such as motors or transformers. In a small plant, the plant electrician usually is responsible for all types of electrical repair work. While doing repair or installation work, the plant electrician may connect wires by splicing or by using mechanical connectors. He may measure, cut, bend, thread and install conduits through which wires are run to outlets, panels and boxes. He also may adjust equipment controls and check and adjust instruments.

Employment opportunities in the field of electronics are expanding rapidly. Opportunities can be found in industry, the service trades, utilities companies, electrical contractors, and federal, state and local government agencies.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

ELECTRONICS TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome for such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
6510	Basic Electronics I		
	or		
°6511	Industrial and Commercial Wiring I	180	9
6512	Electrical Maintenance	60	5
		240	14

Career Opportunities: Basic Electrical Assembler.

SECOND QUARTER			
6520	Basic Electronics II		
	or		
°6521	Industrial and Commercial Wiring II	120	7
6522	Electro-Mechanical Instrumentation	60	4
6523	Electronics Mathematics	60	5
		240	16

Career Opportunities: Basic Electrician Trainee, Electrical Equipment Installer, Component Tester.

THIRD QUARTER			
6530	Electronics Circuits I		
	or		
°6531	AC/DC Machines and Controls	120	7
6532	Heat, Light and Sound	60	4
6533	Technical Communications	60	5
		240	16

Career Opportunities: Commercial Electrician Trainee, Electric Motor Technician, Instrumentation Mechanic, Electrical Appliance Mechanic.

FOURTH QUARTER			
6540	Industrial Electronics I	120	7
6541	Integrated Circuits and Special Semiconductors	84	5
6542	Technical Report Writing	36	2
		240	14

Career Opportunities: Industrial Electronics Equipment Installer, Basic Industrial Electronics Technician.

FIFTH QUARTER			
6550	Industrial Electronics II	120	7
6551	Digital Principles and Applications I	84	5
6552	Digital Mathematics and Logic	36	3
		240	15

Career Opportunities: Basic Digital Equipment Technician, Technical Writer, Test Equipment Maintenance Technician.

SIXTH QUARTER			
6560	Industrial Electronics III	120	7
6561	Digital Principles and Applications II	120	7
		240	14

Career Opportunities: Servomechanisms Technician, Industrial Lab Technician, Digital Equipment Technician, Process Control Equipment Technician.

SEVENTH QUARTER		Hours	Credits
6570	Industrial Electronics IV	60	4
6571	Quality Control	60	4
6572	Magnetic Recording Systems	60	4
6573	Human Relations	60	4
		240	16

Career Opportunities: Quality Control Technician, Manufacturer's Representative, Industrial Electronics Technician, Computer Equipment Technician.

Total Contact Hours: 1,680
Total Credits: 105

*Courses taken by students pursuing the Electricity Option

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement Units

Skills Advancement provides individualized, self-paced instruction tailored to each student's individual needs. The emphasis of the subject material is on communications and mathematics skills with supplementary material oriented toward the electronics industry.

6510 Basic Electronics I — 180 — 9

A study to provide a working knowledge of electrical principles and laws in D-C and A-C circuits. Voltage, current and resistance relationships are stressed on an applied basis. Applied mathematics and the practical use of the slide rule are included. Impedance, reactance, and phase relationships are stressed on an applied basis. Lab work includes practical experience in constructing circuits from diagrams. Component identification and the proper use of lab test equipment is stressed heavily.

6511 Industrial and Commercial Wiring I — 180 — 9

Wiring methods and materials are introduced in conformance with the national electrical code. The basic fundamentals of AC distribution and control are covered in depth. Laboratory work involves the use of typical hand and power tools used in the wiring of residential and commercial buildings. Applied mathematics is included.

6512 Electrical Maintenance — 60 — 5

Preventive electrical maintenance programs are developed for typical industrial and commercial situations. Related meters and test equipment are studied both for preventive and trouble-shooting applications. Protection of life, property, and production are emphasized as primary goals.

6520 Basic Electronics II — 120 — 7

A study of resonance, filters, vacuum tubes, transistors and their relationships to audio and radio frequency amplifiers and oscillators, as well as power supplies. Applied mathematics is also included. Laboratory work emphasizes the practical application of electronics theory in construction, testing and analysis of AC circuits, power supplies and vacuum tube and transistor amplifiers.

6521 Industrial and Commercial Wiring II — 120 — 7

Wiring methods and materials are continued with major emphasis on electric radiant heat circuits and motor controls and installations. Also includes a study of electrical blueprint reading and electrical drafting fundamentals. Applied mathematics is included.

COURSE DESCRIPTIONS — Hours — Credits

6522 Electro-Mechanical Instrumentation — 60 — 4

A study of electrical and mechanical devices and transducers, relays, solenoids, thermo-couples, photocells, piezoelectric crystals, and their methods of control and measurement. Applied mathematics is also included.

6523 Electronics Mathematics — 60 — 5

The application of algebra to electronics equations, formulas, and graphs. Special emphasis is placed on impedance and resonance calculations.

6530 Electronics Circuits I — 120 — 7

An intensive study of the effects of R-L-C circuits and transistors and vacuum tube circuits on square-waves, sinusoidal waveforms and other pulses. Includes a stage-by-stage analysis of a modern laboratory oscilloscope as representative of many pulse circuit techniques. Applied mathematics is included.

6531 AC/DC Machines and Controls — 120 — 7

Characteristics of generators and motors are introduced. Motors and control methods are studied and compared with emphasis on full and reduced voltage magnetic controls. Multi-speed, variable speed, synchronous, and wound rotor are among the types of motors studied. Electrical-mechanical braking and clutches are covered. Solid state motor control is introduced. Applied mathematics is included.

6532 Heat, Light and Sound — 60 — 4

An introduction to physics and its applications to the propagation of light and sound; the production, conduction, and effects of heat; and their applications to electrical circuits.

6533 Technical Communications — 60 — 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

6540 Industrial Electronics I — 120 — 7

Concerned with characteristics and control of gaseous tubes and semi-conductors with emphasis on the Silicon Controlled Rectifier, synchro characteristics, motor controls, phototubes and introduction to servomechanisms. Applied mathematics is included.

6541 Integrated Circuits and Special Semiconductors — 84 — 5

An introduction to the theory and operation of semiconductor devices other than the bipolar transistor. Topics to be covered include Zener and tunnel diodes, photo electric devices, PNPN Transistors, junction transistors, FET's and other special semiconductor devices. Also includes an introduction to the various classifications and categorizations of integrated circuits. Additionally, methods and techniques of integrated circuits packaging, and representative application and operation of integrated circuits will be covered.

6542 Technical Report Writing — 36 — 2

Skills for critical examination of Electronics data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials, graphs, diagrams, and system specifications.

COURSE DESCRIPTIONS Hours Credits

6550 Industrial Electronics II 120 7

An advanced study of transistors, Diodes, FET's, SCR's, UJT's, SCS's and integrated circuits. With an introduction to design with these devices. Topics are: semiconductor physics, diode, transistor, biasing techniques, load-line analysis of transistor amplifier for voltage and power, temperature effect and frequency response; testing equipment including oscilloscopes, VTVM, wave generators, and transistor curve tracer.

6551 Digital Principles and Applications I 84 5

A comprehensive treatment of pulse and logic circuit fundamentals. Basic waveforms of the nonsinusoidal variety frequency used in pulse and logic circuit work. Analysis techniques of pulse and switching circuitry. Other topics are: transistor gate and logic, multivibrators, trigger, sweep generators, bootstrap, diode and transistor matrix, counters, and registers.

6552 Digital Mathematics and Logic 36 3

A comprehensive treatment of computer arithmetic and Boolean algebra fundamentals. Logic arithmetic and its relationships with the binary number system. Boolean Algebra fundamentals and their application to switching circuits.

6560 Industrial Electronics III 120 7

A continuation of Industrial Electronics systems and circuits with an in depth study of electronic controls. Main emphasis will be in the area of solid state controls, process controls, and servomechanisms.

6561 Digital Principles and Applications II 120 7

Modern digital logic, circuits and input/output devices. Switching circuits. Circuits for long-time and short-time storage. Types of organization for storage systems and control systems and application of Boolean algebra.

COURSE DESCRIPTIONS Hours Credits

6570 Industrial Electronics IV 60 4

This course familiarizes the student with design references and specification sheets. It covers the transistor hybrid parameters, silicon controlled rectifier circuits, unijunction transistor circuits, switching circuits, digital and linear integrated circuits. Laboratory work emphasizes the design and construction of projects.

6571 Quality Control 60 4

This course covers the principles and techniques of quality control. Topics covered include vender-customer relationships, sampling inspections, process control and tests for significance. Special emphasis is placed on the use of test equipment to determine component parameters.

6572 Magnetic Recording Systems 60 4

Operational principles of both audio and data tape recording systems will be covered. Maintenance, alignment and operation will be stressed. Mechanical troubleshooting will be introduced. Special emphasis is placed on high speed drives and digital control systems.

6573 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

HEATING, AIR-CONDITIONING AND REFRIGERATION TECHNOLOGY

The growing use of air conditioning (heating and cooling) and refrigeration equipment systems throughout the nation provides many job opportunities for the skilled mechanics who install and repair such equipment in office buildings, factories, homes, food stores, restaurants, theatres, hospitals, churches and other establishments.

A great number of these skilled people are employed by business concerns which specialize in the repair and maintenance of commercial, industrial and home air-conditioning (heating and cooling) and refrigeration equipment. Another important element involves conversion and modernization of obsolete installations.

Employers prefer to hire people who have a background of knowledge and skill in the field and give them the opportunity to gain additional experience on the job while earning good wages.

Thousands of people trained to install, maintain and repair air-conditioning and refrigeration equipment are needed to meet the demand in this field.

There are also excellent opportunities for those who desire to establish their own business in this field. The heating, air-conditioning and refrigeration technician is in a specialized field, much in demand and offering high pay.

In this program emphasis is placed on developing the student's understanding of the entire comfort control system, as well as acquiring skill in the installation and repair of each of its component parts. This prepares the graduate to work closely with design and layout engineers in determining total system specifications and costs.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

HEATING, AIR-CONDITIONING AND REFRIGERATION TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
7110	Heating Principles	120	7
7111	AC Motors and Controls	120	7
		240	14

Career Opportunities: Equipment Installation Helper, Production Line Tester.

SECOND QUARTER		Hours	Credits
7120	Air Movement and Ventilation	96	6
7121	Heating Systems Servicing	84	5
7122	Burner Service	60	4
		240	15

Career Opportunities: Furnace Installation Mechanic Burner Service Technician.

THIRD QUARTER			
7130	Mechanics	120	7
7131	Electrical Circuits and Controls	60	4
7132	Psychrometrics of Air-Conditioning	60	4
		240	15

Career Opportunities: Heating System Technician, Ventilating Systems Mechanic, Furnace Controls Technician.

FOURTH QUARTER			
7140	Basic Refrigeration Principles	120	7
7141	Applied Physics	60	4
7142	Technical Communications	60	5
		240	16

Career Opportunities: Domestic Refrigeration Mechanic, Refrigeration Appliance Installer.

FIFTH QUARTER			
7150	Duct Design and Installation	120	7
7151	Cooling Systems Trouble Shooting	84	5
7152	Blueprint Reading	36	3
		240	15

Career Opportunities: Air-Conditioning Equipment Technician, Manufacturer's Representative, Refrigeration Equipment Assembler.

SIXTH QUARTER			
7160	Advanced Heating-Cooling Systems Servicing	144	8
7161	Specifications and Estimating	96	7
		240	15

Career Opportunities: Commercial Air-Conditioning Mechanic, System Layout Technician, System Specifications Writer.

SEVENTH QUARTER			
7170	Commercial Refrigeration Systems	120	7
7171	Industrial Economics	60	4
7172	Human Relations	60	4
		240	15

Career Opportunities: Commercial Refrigeration Technician, Environmental Control Technician, Equipment Sales Representative.

Total Contact Hours: 1,680
Total Credits: 105

COURSE DESCRIPTIONS Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the heating & air-conditioning field.

7110 Heating Principles 120 7

Introduction to air-conditioning-heating comfort systems; principles of combustion oil burners and their systems; gas burners and their systems; warm air, gravity and forced hot water systems; steam heating systems; electrical heating systems; heat pump heating systems. The various fuels used for heating and their characteristics are thoroughly discussed. Applied mathematics and communication skills are also included.

7111 AC Motors and Controls 120 7

An intensive study of basic electrical circuits; understanding wiring diagrams, basic magnetic theory, electrical measuring instruments; alternating voltage and current; inductance-capacitance; basic AC motor theory; motor starting relays; repulsion induction motors; capacitor start and run motors; motor contractors; motor speed control; protective devices; control circuits, testing basic electrical components; electrical applications; basic troubleshooting procedures in electricity. Applied mathematics is also included.

7120 Air Movement and Ventilation 96 6

A study of special problems in the areas of air handling for heating and ventilation. This includes problems in air duct design, psychrometric problems of design and installation of equipment. There is special attention given to air duct systems, heat gains in ducts, resistance loss in duct systems, fans and blowers. Applied physics, mathematics, and communication skills are also included.

7121 Heating Systems Servicing 84 5

Because definite service procedures are a part of the heating service mechanics practice, this course adds systematic methods of troubleshooting, identifying and correcting types of defective operations in gas, oil, and electric hot air heating systems — the burner, controls, small adjustments and operating conditions. Emphasis is placed on actual practice in servicing, installing and troubleshooting, single and combination AC heating systems; oil burners, gas burners and their controls, etc.

7122 Burner Service 60 4

This course acquaints the student with oil, gas (natural bottled) and electric burners. Their adjustment and replacement as well as repair of the units is involved.

7130 Mechanics 120 7

This covers the principles of levers, gears, pulleys, bearings, and the basic laws of motion and energy. Special emphasis is placed on rotary and reciprocating or oscillating motion, as well as friction and its effects. Also studied are the basic systems of mechanical and scientific measurement.

7131 Electrical Circuits and Controls 60 4

This course covers: control of atmospheric gas burners; control of power gas burners; electrical systems in warm air heating; control systems for vaporizing pot oil burners; control of gun type oil burners; electrical control of hot water heating systems; electrical control of steam heating. Emphasis is placed on room thermostats; fan relays; electrical systems for combination heating and cooling, 3-phase power distribution and circuits; electrical systems for packaged air-conditioning; electrical control of water chiller systems; motorized dampers and valves; trouble diagnosis and correction.

COURSE DESCRIPTIONS Hours Credits

7132 Psychrometrics of Air-Conditioning 60 4

Introduction to air-conditioning; factors affecting body comfort; air cycle in comfort cooling; refrigeration cycle in comfort cooling; psychrometry and the psychrometric chart; estimating the cooling load; air distribution; air duct sizing; window units; central cooling system; installation practices and diagnosis in air-conditioning systems.

7140 Basic Refrigeration Principles 120 7

A study of the purpose, design, and operation of the mechanical refrigeration systems to develop an understanding of their theory. Included are: laws of heat flow; refrigerants; basic compressor construction and theory; gas laws; measurements of heat quantity and intensity; latent and sensible heat; basic evaporator construction; refrigerant controls, air cooled condensers; basic refrigeration cycle; open and hermetic type compressors; refrigeration circuits for domestic refrigeration; pressure temperature relationships and measurements.

7141 Applied Physics 60 4

This is a study of the physical properties of matter and energy, Bernoulli's principles, atmospheric pressure, Archimedes' principle, measurement of heat, co-efficients of heat, composition of sound wave forms, Dopoler effect and the nature of light and related effects.

7142 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

7150 Duct Design and Installation 120 7

Calculations and problems coordinated with laboratory operations and tests including the study of air distribution duct design, fans, filters, diffusers, electric and pneumatic controls. Also included is a study of insulation materials, chimneys and flues. Laboratory work includes use of pilot tubes, aneomometers, manometers and draft gauges in checking duct systems for heating and cooling operations. There is demonstration and practice in carefully designing air ducts for the transmission of air in a forced-air heating, ventilation or air-conditioner system from the standpoint of economy and proper functioning. Also includes a study of the basic elements of sheet metal work as applied to the design, layout, and construction of heating-cooling duct work. The student will proceed rapidly into practical layout problems met in heating, ventilating and air-conditioning.

7151 Cooling Systems Trouble Shooting 84 5

After the cooling system mechanic has acquired functional knowledge of procedures for normally servicing the details of cooling systems, this course demonstrates the troubleshooting or emergency range of operating faults which can occur in residential year-round air-conditioning such as drafts, shortage of air supply at grills, water leaking from units, vibration, hissing noise at expansion valves, electric malfunctions, motor overheating, motor failures, with step-by-step identification of symptoms, causes and remedies.

7152 Blueprint Reading 36 3

A specialized course for heating, air-conditioning, and refrigeration students. Emphasis will be placed on reading blueprints common to the trade; blueprints of mechanical components, assembly drawings, wiring diagrams and schematics, floor plans as well as developing floor plans and "shop" sketches. The student will also make tracings of floor plans and layout of air-conditioning systems.

7160 Advanced Heating-Cooling Systems Servicing 144 8

An advanced study of design, troubleshooting and problems associated with large tonnage air-conditioning systems, and overall analysis and assessment of the installation for satisfactory operation. Special emphasis is placed on trouble shooting and wiring of control circuits and systems, as well as testing these phases. Topics include: electrical control of multi-plexed systems; trouble diagnosis and correction; control of cooling towers; evaporative condensers and remote air cooled condensers. Applied mathematics and communication skills are also included.

7161 Specifications and Estimating 96 7

This is a study of the principles, practices and procedures involved in the proper operation of a heating and air-conditioning service organization. Special emphasis is placed on understanding and interpreting manufacturer's catalogs and data sheets; the coordinated selection of components for a complete heating-cooling installation; estimation of both material and labor costs for complete installation, as well as costs for service on existing systems.

7170 Commercial Refrigeration Systems 120 7

Introduction to commercial refrigeration; temperature and humidity requirements for product storage; calculation of heat load in commercial applications; equipment selection; refrigerant line sizing; condensing units and cooling coils; multi-plexed refrigeration systems; cooling towers; evaporative and remote air cooled condensers; defrosting systems and time clocks; ultra-low temperature systems; ice makers; installation practices, service diagnosis and maintenance techniques used in commercial refrigeration. Applied mathematics and communication skills are also included.

7171 Industrial Economics 60 4

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

7172 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

INDUSTRIAL MAINTENANCE TECHNOLOGY

Specialization and complex design have been for many years dominant factors in the development of machinery and equipment for large industrial plants.

In the last few years there has emerged a heavy demand for the "generalist" who has a broad spectrum of skills which can be utilized in the installation and routine maintenance of many types of mechanical and electrical equipment. This need is most acute in the small and medium-sized industrial plants that identify their equipment maintenance needs as beyond the ability of the typical "handyman" but do not require the services of an entire team of specialists.

This program prepares the student to perform installation and general maintenance in three major areas; machine tools, heating and air-conditioning, and electrical wiring and equipment.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

INDUSTRIAL MAINTENANCE TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
7310	Industrial and Commercial Wiring	120	7
7311	AC/DC Machines and Controls	120	7
		240	14

SECOND QUARTER			
7320	Electrical Maintenance	120	7
7321	Machine Tool Process Fundamentals	120	7
		240	14

Career Opportunities: Basic Maintenance Electrician, Electrical Equipment Installer, Basic Electrical Troubleshooter.

THIRD QUARTER			
7330	Machine Tools	120	7
7331	Machine Tool Electrical Circuits	60	3
7332	Technical Mathematics I	60	5
		240	15

Career Opportunities: General Maintenance Electrician, Basic Machine Tool Troubleshooter.

FOURTH QUARTER			
7340	Machine Diagnosis and Repair	120	7
7341	Hydraulic and Pneumatic Systems	60	4
7342	Technical Communications	60	5
		240	16

Career Opportunities: Machine Maintenance Man, Mechanical Troubleshooter, Machine Tool Installer.

FIFTH QUARTER		Hours	Credits
7350	Heating Principles	120	7
7351	Burner Service	60	4
7352	Physical Science	60	4
		240	15

Career Opportunities: Burner Service Mechanic, Equipment Installation Assistant.

SIXTH QUARTER			
7360	Air Movement and Ventilation	96	6
7361	Industrial Refrigeration Principles	84	5
7362	Applied Geometry and Trigonometry	60	5
		240	16

Career Opportunities: Heating Plant Maintenance Assistant, Basic Refrigeration Equipment Troubleshooter.

SEVENTH QUARTER			
7370	Industrial Refrigeration Systems	84	5
7371	Industrial Heating-Cooling Systems Servicing	96	6
7372	Human Relations	60	4
		240	15

Career Opportunities: Industrial Maintenance Technician, Air Conditioning Systems Mechanic, Heating-Cooling Equipment Installer.

Total Contact Hours: 1,680
Total Credits: 105

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the industrial maintenance field.

7310 Industrial and Commercial Wiring 120 7

Wiring methods and materials are introduced in conformance with the national electrical code. The basic fundamentals of AC distribution and control are covered in depth. Also includes a study of electrical blueprint reading and electrical drafting fundamentals. Applied mathematics is included.

7311 AC/DC Machines and Controls 120 7

Characteristics of generators and motors are introduced. Motors and control methods are studied and compared with emphasis on full and reduced-voltage magnetic controls. Multi-speed, variable speed, synchronous, and wound-rotor are among the types of motors studied. Electrical-mechanical braking and clutches are covered. Solid state motor control is introduced. Applied mathematics is included.

7320 Electrical Maintenance 120 7

Preventive electrical maintenance programs are developed for typical industrial and commercial situations. Related meters and test equipment are studied both for preventive and trouble

shooting applications. Protection of life, property, and production are emphasized as primary goals.

7321 Machine Tool Process Fundamentals 120 7

Benchwork, sawing, filing, layout, drilling reaming, and care and use of basic machines and measuring tools related to machine tool processes. Applied mathematics and communications skills are also included.

7330 Machine Tools 120 7

Lathe, drill-press, shaper, and milling machine operation is introduced, including work-holding methods and devices, proper set-ups, cutting and precision measuring tools. Fundamental machine shop requirements as to the use of the various gauges, measuring instruments and related tools, as well as applied mathematics and communications skills are also included.

7331 Machine Tool Electrical Circuits 60 3

This is a practical application course in machine tool wiring methods and design including circuit and conductor calculations, motor circuits and controls, machine tool hook-up and circuiting. The National Electrical Code is introduced as it applies to the field. Applied mathematics is also included.

7332 Technical Mathematics I 60 5

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

7340 Machine Diagnosis and Repair 120 7

The student is instructed in the skills of machine tools commonly used to produce new and reconditioned parts for machines under repair. Proficiency is gained in the use of basic machine tools in repairing work and damaged components of machine tools in repair. Special emphasis is placed on safety precautions to be used when working on instruments, the set up of an instrument shop and shop procedures, calibration techniques and repair of electro-mechanical devices. Also includes specialized practice in computation for tool room equipment. Standard and special component parts, including use of catalogs is stressed.

7341 Hydraulic and Pneumatic Systems 60 4

The fundamentals of fluid power and the components are covered as to principle, function, terminology, repair and use. Study of machine tool circuits is used to make application.

7342 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

7350 Heating Principles 120 7

Introduction to air-conditioning-heating comfort systems; principles of combustion oil burners and their systems; gas burners and their systems; warm air, gravity and forced hot water systems; steam heating systems, electrical heating systems; heat pump heating systems. The various fuels used for heating and their characteristics are thoroughly discussed. Applied mathematics and communication skills are also included.

7351 Burner Service 60 4

This course acquaints the student with oil, gas (natural bottled) and electric burners. Their adjustment and replacement as well as repair of the units is involved.

COURSE DESCRIPTIONS Hours Credits

7352 Physical Science 60 4

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.

7360 Air Movement and Ventilation 96 6

A study of special problems in the areas of air handling for heating and ventilation. This includes problems in air duct design, psychometric problems of design and installation of equipment. There is special attention given to air duct systems, heat gains in ducts, resistance loss in duct systems, fans and blowers. Applied physics, mathematics, and communication skills are also included.

7361 Industrial Refrigeration Principles 84 5

A study of the purpose, design, and operation of the mechanical refrigeration systems to develop an understanding of their theory. Included are: laws of heat flow; refrigerants; basic compressor construction and theory; gas laws; measurements of heat quantity and intensity; latent and sensible heat; basic evaporator construction; refrigerant controls; air cooled condensers; basic refrigeration cycle; open and hermetic type compressors; pressure temperature relationships and measurements.

7362 Applied Geometry and Trigonometry 60 5

This course in geometry broadens the knowledge of techniques used in solving problems involving spatial relationships of points, lines, surfaces, and solids. Auxiliary views, true-size constructions, revolution, developments, cutting planes, graphical treatment of vectors, and classification of surfaces are included. Particular emphasis is placed on trigonometry of right and oblique triangles, analytical trigonometry including vectors and equations.

7370 Industrial Refrigeration Systems 84 5

Introduction to commercial refrigeration; temperature and humidity requirements for product storage; calculation of heat load in commercial applications; equipment selection; refrigerant line sizing; condensing units and cooling coils: multi-plexed refrigeration systems; cooling towers; evaporative and remote air cooled condensers; defrosting systems and time clocks; ultra-low temperature systems; ice makers; installation practices, service diagnosis and maintenance techniques used in commercial refrigeration. Applied mathematics and communication skills are also included.

7371 Industrial Heating-Cooling Systems Servicing 96 6

An advanced study of design, trouble shooting and problems associated with large tonnage air-conditioning systems, and overall analysis and assessment of the installation for satisfactory operation. Special emphasis is placed on troubleshooting and wiring of control circuits and systems, as well as testing these phases. Topics include: electrical control of multi-plexed systems; trouble diagnosis and correction; control of cooling towers; evaporative condensers and remote air cooled condensers. Applied mathematics and communication skills are also included.

7372 Human Relations 60 4

In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

MANUFACTURING DESIGN TECHNOLOGY

The products of the manufacturing industry range in complexity from a simple plastic toy to an intricate electronic computer and in size from miniature electronic components to gigantic nuclear powered aircraft carriers. Many of the processes carried out in this manufacturing must be designed which leads to the need for persons competent in manufacturing design drafting.

Drafting technicians working in manufacturing and design areas produce the working drawings which are used by craftsmen to manufacture products. They do factory layout work, tool and mold design work, tooling layout work, scheduling, purchasing of raw materials, and sometimes are responsible for the complete fabrication of a particular product.

Opportunities for employment may be found with manufacturing firms, construction companies, public utilities, highway and public works departments, colleges, universities and local, state and federal governmental units.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

MANUFACTURING DESIGN TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
7510	Technical Drafting I	120	6
7511	Physical Science	60	4
7512	Technical Mathematics I	60	5
		240	15

SECOND QUARTER			
7520	Technical Drafting II	120	7
7521	Mechanisms and Machines	60	4
7522	Applied Geometry	60	5
		240	16

Career Opportunities: Basic Mechanical Draftsman, Detail Draftsman.

THIRD QUARTER			
7530	Technical Drafting III	144	7
7531	Manufacturing Processes and Systems	60	5
7532	Technical Trigonometry	36	3
		240	15

Career Opportunities: Letterer, Detailer.

FOURTH QUARTER		Hours	Credits
7540	Jig and Fixture Design Drafting	180	8
7541	Technical Communications	60	5
		240	13

Career Opportunities: Jig and Fixture Design Assistant, Mechanical Layout Draftsman.

FIFTH QUARTER			
7550	Tool Design Drafting	180	8
7551	Human Relations	60	4
		240	12

Career Opportunities: Tool Design Assistant, Tool Drawing Checker.

SIXTH QUARTER			
7560	Die Design Drafting	180	8
7561	Industrial Economics	60	4
		240	12

Career Opportunities: Die Design Assistant, Sheet Metal Draftsman, Basic Tool and Die Draftsman.

SEVENTH QUARTER			
7570	Numerical Control and Data Processing	120	7
7571	Manufacturing Planning and Estimating	60	4
7572	Design Problems	60	4
		240	15

Career Opportunities: Basic Design Draftsman, Manufacturing Design Technician, Engineering Inspector, Specification Checker.

Total Contact Hours: 1,680
Total Credits: 98

COURSE DESCRIPTIONS — Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the manufacturing drafting field.

7510 Technical Drafting I 120 6

This course covers the uses of drafting equipment, free hand lettering, shape description and free hand sketching. The importance of complete and accurate drawings is stressed.

7511 Physical Science 60 4

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.

7512 Technical Mathematics I 60 5

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

7520 Technical Drafting II 120 7

An intermediate course involving dimensioning practices, symbolisms and conventions, fits and allowances and drafting standards. Sections, auxiliary views, isometric sketching and working drawings are covered. Proper use of instruments, use of arm and track drafting machines, blue printing, geometric constructions with emphasis on appropriate line weights and general drafting skill, multiview drawing, sketching, dimensioning, layout, introduction to vector construction and proceeding to simple working drawings.

7521 Mechanisms and Machines 60 4

Principles of physics and mechanics. Strength of materials and metallurgy as applied to mechanical design. Procedures and consideration in design of simple machine elements such as shafts, bearings, couplings, keys, pins, springs, clutches, brakes, and pressure cylinders simulate current industrial methods. Emphasis is placed on neat, orderly procedure and a thorough consideration of design specifications. Specific topics include: displacement, velocity and acceleration, analysis of linkages, cams and gears, geometry of involute gears, properties of a standard spur, helical, bevel, and planetary gears.

7522 Applied Geometry 60 5

Descriptive geometry broadens the knowledge of techniques to use in solving problems involving spatial relationships of points, lines, surfaces, and solids. Auxiliary views, true-size constructions, revolution, developments, cutting planes, graphical treatment of vectors, and classification of surfaces are included.

7530 Technical Drafting III 144 7

A study of working drawings, detail and assembly drawings, use of handbook data, developments and intersections. Gears, cams, threads and fasteners, springs, and weldments are emphasized. Applied mathematics and communications skills are also included.

7531 Manufacturing Processes and Systems 60 5

A study of manufacturing processes and equipment selection and use of modern machine tools. Includes the study of the basic methods of fabri-action used in modern manufacturing. Welding, electroforming, metallic coating, anodizing, plating and machine tool numerical control, and hydraulic systems, as used in industrial processes, are studied. Applied mathematics and communications skills are also included.

7532 Technical Trigonometry 36 3

Trigonometry of right and oblique triangles, and analytical trigonometry including vectors are covered in the course.

7540 Jig and Fixture Design Drafting 180 8

The study and design of Jigs and Fixtures, covering the basic types used in industry. Intensive procedures of detailing out of assembly. Special emphasis is placed on the theory of gaging; basic terminology ring, snap, flush, pin, thread, indicator and location gates. Dimensioning and tolerancing of gages. Applied mathematics and communication skills are also included.

7541 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

7550 Tool Design Drafting 180 8

Design and application of tooling devices as used in machine shop production: Jigs, dies, fixtures, cutting tools, tool holders, gages, and gaging procedures are studied. Incorporation of standard fixture parts into tooling devices is emphasized. Concepts of stress and strain. Analysis of elementary stress distributions and deformations; torsion; stresses; sheer and bending moment diagrams; section modulus. Introduction to rectilinear, curvilinear motion and angular rotation.

7551 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

7560 Die Design Drafting 180 8

This course covers the planning and designing of dies, including piercing and forming, die cast and plastic mold dies. Design procedure for blanking, progressive, compound, piece-part-form-bend and draw dies. Standard company and handbook data. Through usage of detailing in Assembly.

7561 Industrial Economics 60 4

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

7570 Numerical Control and Data Processing 120 7

Introduces the concept of automatic process control. Fundamentals of feedback elements, transmission, control action, controlling elements, transmission, control action, controlling elements and final control elements as used in pneumatic, hydraulic and electrical systems. Special emphasis is placed on the relationship between digital devices and the automatic process control system. Includes a brief introduction to *Fortran* programming. Applied mathematics is also included.

7571 Manufacturing Planning and Estimating 60 4

This course applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development, and manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering, and manufacturing information systems. Also includes a study of time and motion in the practical application area, using industrial practice as a basis for the establishment of rates. Applied mathematics and communication skills are stressed.

7572 Design Problems 60 4

Opportunity to integrate the knowledge previously acquired to design complete machines or sub-assemblies of machines. Analyze problems, gather data, sketch ideas on paper, do necessary mathematical calculations, make working drawings, and finally checks work. Encourage to use judgment and initiative to the maximum.

TOOL ENGINEERING TECHNOLOGY

The tools and equipment used by industry must be kept in good operating condition, and skilled workers who can maintain and repair these tools are needed throughout the country. The main function of a machine tool repairman is to restore the accuracy to the machine tools. He does this by replacing parts, rebuilding, regrinding and rescraping.

In addition, modern manufacturing procedures require the services of a well-trained machinist to operate and maintain machine tools at peak efficiency. This highly-skilled craftsman transforms a common piece of metal into an intricate part meeting precise requirements.

The planning and testing of machines and tools for performance, durability and efficiency provide a large area of work for tool engineering technicians. In the testing procedure, they record data, make computations, plot graphs, analyze results and write reports. The technician occasionally makes recommendations for design changes to improve performance. The jobs often require skill in the use of test instruments, test equipment and gauges.

Some of the technician's time is spent in preventive maintenance by regularly inspecting the equipment, thus preventing trouble which could cause breakdowns later. The technician may keep maintenance records of the equipment served.

Mechanical aptitude and manual dexterity are important qualifications for this work. Tool engineering technicians may work in production departments, maintenance departments, tool rooms and job shops.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

TOOL ENGINEERING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

	FIRST QUARTER	Hours	Credits
7710	Basic Machine Tool Processes	180	8
7711	Physical Science	60	4
		240	12

Career Opportunities: Tool Clerk.

	SECOND QUARTER		
7720	Machine Tools I	120	7
7721	Drafting and Manufacturing Standards	60	4
7722	Applied Geometry and Trigonometry	60	5
		240	16

Career Opportunities: Beginning Lathe Operator, Beginning Milling Operator, Beginning Drill-Press Operator, Beginning Shaper Operator.

	THIRD QUARTER		
7730	Machine Tools II	144	8
7731	Blueprint Fundamentals	60	4
7732	Hydraulic and Pneumatic Fundamentals	36	3
		240	15

Career Opportunities: Basic Surface Grinder, Production Lathe Operator.

	FOURTH QUARTER		
7740	Specialized Machine Tools	120	7
7741	Basic Metallurgy and Heat Treatment	60	5
7742	Electrical Circuits	60	3
		240	15

Career Opportunities: Basic Machinist, Maintenance Machinist.

	FIFTH QUARTER		
7750	Machine Tool Diagnosis and Repair	120	7
7751	Quality Control Techniques	60	4
7752	Technical Communications	60	5
		240	16

Career Opportunities: Quality Control Assistant, Machine Design Assistant, Tool Room Operator, Materials Tester.

	SIXTH QUARTER		
7760	Numerical Control and Automatic Processing	144	8
7761	Strength of Materials	60	4
7762	Precision Measurement, Layout and Inspection	36	3
		240	15

Career Opportunities: Tape Control Technician, Tool Programming Assistant, Machine Tool Troubleshooter.

	SEVENTH QUARTER		
7770	Manufacturing Planning and Estimating	60	4
7771	Industrial Economics	60	4
7772	Human Relations	60	4
7773	Motion and Time Study	60	4
		240	16

Career Opportunities: Tool Engineering Technician, Mechanical Engineering Technician, Tool Manufacturer's Representative.

Total Contact Hours: 1,680
Total Credits: 105

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction trailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the machine tool industry.

7710 Basic Machine Tool Processes 180 8

Benchwork, sawing, filing, layout, drilling, reaming, care and use of basic machines and measuring tools related to machine tool processes. Applied mathematics and communications skills are also included.

7711 Physical Science 60 4

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.

7720 Machine Tools I 120 7

Lathe, drill-press, shaper, and milling machine operation is introduced, including work-holding methods and devices, proper set-ups, cutting and precision measuring tools. Fundamental Machine Shop requirements as to the use of the dividing head. Completed, hardened and ground V-block rests.

7721 Drafting and Manufacturing Standards 60 4

This course includes drafting theory and practice with special consideration given to the standard practices of dimensioning, tolerancing, and notations of tooling components such as proper practices of revolving out of position, line elimination, sectioning and other related areas as they apply to drawings of castings, forgings and machine stock.

7722 Applied Geometry and Trigonometry 60 5

Descriptive geometry broadens the knowledge of techniques to use in solving problems involving spatial relationships of points, lines, surfaces, and solids. Auxiliary views, true-size constructions, revolution, developments, cutting planes, graphical treatment of vectors, and classification of surfaces are included. Particular emphasis is placed on trigonometry of right and oblique triangles, analytical trigonometry including vectors and equations.

7730 Machine Tools II 144 8

A continuation of Machine Tool set-up and operation, with special emphasis on surface and cylindrical grinding. The student also becomes accustomed to the use of various gauges, measuring instruments and related tools as well as hardness testing. Precision grinding, lapping, and micro-finishes are stressed. Applied mathematics and communications skills are also included.

7731 Blueprint Fundamentals 60 4

Machine shop blueprints are read and interpreted relative to dimensions, shapes, machining operations, fabrication and assembly. Basic mathematics is applied in solving shop problems. Develop ability in making sketches on the job without instruments. Two and three view drawings, auxiliary views, screw threads and summary problems.

7732 Hydraulic and Pneumatic Fundamentals 36 3

The fundamentals of fluid power and the components are covered as to principle, function, terminology, repair and use. Study of machine tool circuits is used to make application.

7740 Specialized Machine Tools 120 7

A further investigation and study of metal cutting and machine tool principles including differential indexing, gear cutting and helical and cam milling. Tracer template design and metric transposition are studied. Advanced machine tool processes in the varied areas, including special projects, machine tool maintenance and tool making. Applied mathematics and communication skills are also included.

COURSE DESCRIPTIONS Hours Credits

7741 Basic Metallurgy and Heat Treatment 60 5

The fundamentals of thermodynamics and reactions that occur in metals subjected to various heat-treatment methods and techniques. Utilization of gas and electric furnaces and their controls are covered. Heat treatment principles as applied to ferrous and non-ferrous materials are covered. Properties of metals and tests to determine their uses. Chemical and physical metallurgy. Theory of alloys. Treatment for steels, special steels and cast iron. Powder metallurgy. Classification of metals. Applied mathematics and communication skills are also included.

7742 Electrical Circuits 60 3

This is a practical application course in industrial wiring methods and design including circuit and conductor calculations, motor circuits and controls, transformer and entrance layouts, illumination design, machine tool hook-up and circuiting. The National Electrical Code is introduced as it applies to the field. Applied mathematics is also included.

7750 Machine Tool Diagnosis and Repair 120 7

The student is instructed in the skills or machine tools commonly used to produce new and reconditioned parts for machines under repair. Proficiency is gained in the use of basic machine tools in repairing work and damaged components of machine tools in repair. Special emphasis is placed on safety precautions to be used when working on instruments, the set up of an instrument shop and shop procedures, calibration techniques and repair of electro-mechanical devices. Also includes specialized practice in computation for tool room equipment. Standard and special component parts, including use of catalogs is stressed.

7751 Quality Control Techniques 60 4

Emphasis is placed on the principles and techniques of quality control to fulfill the organizational objectives of completing the job correctly the first time. Topics covered include vender-customer relationships, sampling inspections, process control and tests for significance. Emphasis is placed on an individual being able and qualified to determine what type of quality control is best for a particular tool engineering application.

7752 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

7760 Numerical Control and Automatic Processing 144 8

Introduces the concept of automatic process control. Fundamentals of feedback elements, transmission, control action, controlling elements and final control elements as used in pneumatic, hydraulic and electrical systems. Special emphasis is placed on the relationship between digital devices and the automatic process control system; the special tooling techniques required; the programming of tape controlled machines; and the applied mathematics required.

7761 Strength of Materials 60 4

This course covers the basic laws of statics as applied to the systems of coplaner force systems and friction. Strength of ma-

terials covers the properties of materials and the simple stresses and deformation of elastic bodies resulting from external forces. Tables of properties of engineering materials are used extensively. Analysis of simple and combined stresses relative to the properties of the materials to meet functional requirements.

7762 Precision Measurements, Layout and Inspection 36 3

A study of methods and techniques of applying precision measurements to the varied machine tool processes, including applications to production and quality control. Covered also are tolerance, fits and allowances. Interchangeability is considered in relation to inspection procedures along with gauge inspection where appropriate.

7770 Manufacturing Planning and Estimating 60 4

This course applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development, and manufacturing without affecting quality. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organization structure. Also reviewed are manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering, and manufacturing information systems.

COURSE DESCRIPTIONS Hours Credits

7771 Industrial Economics 60 4

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

7772 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

7773 Motion and Time Study 60 4

A study of time and motion in the practical application area, using industrial practice as a basis for the establishment of rates. The subjects will include elemental breakdown sheets, leveling factors, variables, M.T.M. application, standard data, general purpose data, sampling study, direct and indirect standards, and graphical expression. Applied mathematics and communication skills are also included.

WATER AND WASTEWATER TECHNOLOGY

The need for trained personnel in the clean water field has reached an all time high, and is rapidly outstripping available training resources. Under the stimulus of grants provided by State and Federal governments, the expenditure for construction of municipal waste treatment plans has been accelerated. Treatment plants have grown larger and more complex, requiring additional and more highly trained operating staffs. Moreover, from all indications, industry, too, will greatly expand water pollution control programs in order to meet the requirements of the Water Quality Act of 1965. Without trained personnel, even the best waste treatment plant will fail to yield its full potential in improved water quality.

The impact of applied technological developments and changes in the field of water and wastewater treatments and the magnitude of the waste and trash-disposal problem have created the need for competent support personnel at the technician level. The technicians assist researchers, public health guardians, and plant operators. They also develop competency for other responsible positions in the general field of water usage and public health.

The water and wastewater technicians can function as a member of the team engaged in research or pilot plant development and operation; as an operator or assistant operator of water purification or wastewater-treatment facilities; as a member of the public health team; or as an assistant in designing operational facilities.

This program is designed to supply the student with a background of knowledge in the diverse areas of applied sanitation which relate to water and wastewater. It offers a firm foundation in microbiology and basic hydraulics and emphasizes subject areas such as sanitary chemistry and biology, water supply and wastewater collection, water purification, wastewater treatment, and water pollution control equipment. Installation and maintenance of plant equipment and instrumentation devices is an important part of the student's training.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

WATER AND WASTEWATER TECHNOLOGY

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
7910	Physical Science and Electricity	120	7
7911	Introduction to Water Pollution Control	60	4
7912	Technical Mathematics I	60	5
		240	16

SECOND QUARTER			
7920	Basic Hydraulics and Water Control	96	7
7921	General Chemistry and Microbiology	84	6
7922	Basic Drafting	60	4
		240	17

Career Opportunities: Water Pollution Measurement Assistant, Laboratory Aide, Water Treatment Plant Worker, Wastewater Treatment Plant Worker.

THIRD QUARTER			
7930	Sanitary Chemistry and Microbiology	84	6
7931	Technical Mathematics II	60	5
7932	Basic Surveying	60	3
7933	Community Relations	36	3
		240	17

Career Opportunities: Laboratory Assistant, Wastewater Treatment Plant Assistant, Water Treatment Plant Assistant.

FOURTH QUARTER			
7940	Municipal Water and Wastewater Treatment	120	7
7941	Instrumentation and Controls	60	4
7942	Technical Communications	60	5
		240	16

Career Opportunities: Municipal Water Treatment Plant Technician, Municipal Wastewater Treatment Plant Technician, Instrumentation Assistant, Water Pollution Measurements Technician.

FIFTH QUARTER			
7950	Special Problems (Field Study)	120	6
7951	Industrial Water and Wastewater Treatment	60	4
7952	Contracts, Specifications, Codes and Estimates	36	3
7953	Applied Research	24	2
		240	15

Career Opportunities: Industrial Water Treatment Technician, Industrial Wastewater Treatment Technician, Water and Wastewater Construction Inspector, Water and Wastewater Engineering Aide, Regulatory Field Inspector, Municipal Water Treatment Plant Operator, Municipal Wastewater Treatment Plant Operator.

Total Contact Hours: 1,200
Total Credits: 81

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the environmental control field.

7910 Physical Science and Electricity 120 7

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power; the concepts of magnetism and electrostatics, basic electric circuits, sources and effects of electric current, electromagnetic induction, alternating currents, generators and motors and the production and distribution of electric power.

7911 Introduction to Water Pollution Control 60 4

A general overview of the entire pollution problem relating each type of pollution, i.e., air, water, population, solid waste, radiation, and noise, to each of the others. Pollution terminology and history are introduced, especially that of water and wastewater treatment.

7912 Technical Mathematics I 60 5

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

7920 Basic Hydraulics and Water Control 96 7

A course designed to familiarize the student with the elementary engineering aspects of water supply and distribution; and of wastewater collection, removal, and disposal. Includes an introduction to the study of closed conduit and open channel flow, including stream flow, subterranean flow, runoff, pump characteristics, and wave action.

7921 General Chemistry and Microbiology 84 6

An introductory study of chemical operations, including atomic structure, chemical bonding, property of matter, solutions, and an introduction to organic chemistry. Microbiology is introduced with emphasis on microorganisms peculiar to water and wastewater, and related public health and stream sanitation problems. Applied mathematics and communications skills are also included.

7922 Basic Drafting 60 4

A beginning course for students who have had little or no previous experience in drafting. The principal objectives are to provide an elementary understanding of: orthographic projection, isometric and oblique sketching, detail and assembly working drawings, principles and applications of descriptive geometry to drawings, plan, profile and topographic drawing, how to use handbooks and other resource materials. Interpretation of industrial sketches and prints is introduced.

7930 Sanitary Chemistry and Microbiology 84 6

Theory and laboratory techniques for all control tests of water purification including: bacteriology, color, turbidity, pH, alkalinity, hardness, coagulations, chlorides, fluorides, iron, manganese, detergents, bactericides, and nitrates, the determination of solids, dissolved oxygen, organic nitrogen, volatile acids, and toxic metals in liquid media. The course includes stream studies and in-plant studies.

COURSE DESCRIPTIONS Hours Credits

7931 Technical Mathematics II 60 5

A continuation of algebra with emphasis on scientific notation, powers and roots. Also includes geometry and basic trigonometry.

7932 Basic Surveying 60 3

A study of the elementary theory and practice of plane surveying including taping, differential and profile leveling, cross sections, earthwork computations; and transit, stadia, and transit-tape surveys.

7933 Community Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals relate to an interdependent society. Special emphasis is designed to improve individual attitudes, productivity and morale in working situations. The specific aspects of public relations development and image maintenance are stressed.

7940 Municipal Water and Wastewater Treatment 120 7

A study of basic principles of water purification including: aeration sedimentation, rapid sand filtration, chlorination, treatment chemicals, taste and odor control, bacteriological control, mineral control, design criteria, maintenance programs, and operational problems. New processes and recent developments are studied. Criteria, rules, regulations, forms, and records associated with the field are considered. Also emphasizes the elementary engineering aspects of the design, operation, and maintenance of wastewater treatment plants and includes specific topics on: design parameters for all processes; materials used and their purposes; type and operation of equipment; maintenance of plant and equipment and typical solutions to specific operational problems. Electrical wiring of motors and control circuits, and their associated troubleshooting techniques are also studied.

7941 Instrumentation and Controls 60 4

Hydraulic, pneumatic, mechanical, electrical and electronic control systems and components. Basic description, analysis, and explanation of operation. Typical performance characteristics, limitations on performance, accuracy, applications and their use in environmental control. Applied mathematics is stressed.

7942 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

7950 Special Problems (Field Study) 120 6

Selected field design and operations problems will be covered under job-simulated conditions, in order to gain final employment readiness and on-the-job experience.

7951 Industrial Water and Wastewater Treatment 60 4

The special problems of industrial water and wastewater treatment are studied in this course, with emphasis given to the major classifications of liquid industrial wastes. Neutralization, equalization, and proportioning are covered in detail, as well as the removal of troublesome solids.

COURSE DESCRIPTIONS	Hours	Credits
7952 Contracts, Specification, Codes and Estimates	36	3

The basic principles and methods which are most significant in contract relationships; appreciation of the legal considerations in construction work; study of the National Building Code and local building codes; interpreting and outlining specifications; estimating both construction and operating costs for equipment and facilities; compliance with, and interpretation of, Federal EPA regulations.

COURSE DESCRIPTIONS	Hours	Credits
7953 Applied Research	24	2

The student will be expected to research an area of interest in the water and/or wastewater treatment area and present a paper regarding the research. Guest speakers will be invited to the classes to present lectures in their area of expertise.

WELDING TECHNOLOGY

Welding is one of the most common and most dependable methods of joining metal parts. Many parts used in the manufacture of automobiles, missiles and spacecrafts, airplanes, household appliances and thousands of other products are joined by welding.

Structural metal used in the construction of bridges, buildings and storage tanks often is welded. The welding process is used to repair broken metal parts.

Welders join the metal parts by applying intense heat and sometimes pressure. This melts the edges and allows the formation of a permanent bond. There are more than 35 different ways to weld, with electric arc, gas and resistance welding the three most important.

The principal duty of the welder is to control the melting by directing the heat from either an electric arc or a gas welding torch and to add filler metal where necessary to complete the joint.

Employment opportunities are available in the fabrication and building trades as well as in small shops doing maintenance work. Industries which need welders include utility companies, light and heavy metal manufacturing concerns, electric motor manufacturers, construction companies, mining concerns, farm and industrial equipment manufacturers, and truck and automobile manufacturers. In fact, almost all manufacturers who use metal need welders.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

WELDING TECHNOLOGY
Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

FIRST QUARTER		Hours	Credits
8010	Gas Welding and Cutting	240	8
8011	Physical Science	60	4
		300	12

Career Opportunities: Flame Cutter, Beginning Brazer, Beginning Gas Welder.

SECOND QUARTER			
8020	Arc Welding	180	6
8021	Basic Metallurgy	60	4
8022	Blueprint Interpretation	60	5
		300	15

Career Opportunities: Arc Cutter, Basic Arc Welder, Set-up Man.

THIRD QUARTER		Hours	Credits
8030	Inert-Gas Welding	180	6
8031	Electrical Fundamentals	60	3
8032	Industrial Materials	60	5
		300	14

Career Opportunities: Inert-Gas Welder, Repair Welder, General Arc Welder.

FOURTH QUARTER			
8040	Production and Resistance Welding	120	6
8041	Welding Equipment Maintenance	120	3
8042	Technical Communications	60	5
		300	14

Career Opportunities: Basic Spot Welder, Welding Equipment Repairman, Welding Equipment Salesman, Beginning Production Welder, Basic Resistance-Welding Operator.

FIFTH QUARTER			
8050	Welding Troubleshooting and Inspection	120	6
8051	Ultrasonic and Non-Metallic Welding	60	4
8052	Human Relations	60	4
		240	14

Career Opportunities: Welding Technician, Welding Inspector, Estimator, Manufacturer's Representative.

Total Contact Hours: 1,440
Total Credits: 69

COURSE DESCRIPTIONS — Hours — Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the welding industry.

8010 Gas Welding and Cutting — 240 — 8

This phase of the welding program is designed specifically to provide basic skills and fundamental knowledge in oxyacetylene welding. A major share of the class time is devoted to actual welding practice, including a detailed study of the techniques of making welds in all positions. Some instruction is given in brazing, cast iron welding, pipe welding, silver soldering and flame cutting. Lectures and discussion provide additional background information essential to a qualified welder. Applied mathematics and communications skills are also included.

8011 Physical Science — 60 — 4

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.

8020 Arc Welding — 180 — 6

This course covers the welding of ferrous metals and alloys utilizing electric welding methods and techniques and the car-

bon arc torch. Safety hazards and safe practices in arc welding are covered. Applied mathematics and communications skills are also included.

8021 Basic Metallurgy 60 4

The properties and uses of non-ferrous metals and alloys, production of iron and steel, composition and properties of plain carbon steel and alloying elements, selection of tool steel, iron carbon diagram, case hardening, destructive and non-destructive testing. Also includes the fundamentals of heat treatment and reactions that occur in metals subjected to various heat-treatment methods techniques. Utilization of gas and electric furnaces and their controls are covered.

8022 Blueprint Interpretation 60 5

Basic fundamentals of drawing interpretation is applied in the welding trade. Deals with welding symbols, their significance, welding structures, specifications and assembly drawings, interpretation of blueprints which show job procedure methods and their relation to drafting. Specific attention is given to representation of common machine processes, special forms of dimensioning, sections, and other advanced drafting and design principles. Applied mathematics is also included.

8030 Inert-Gas Welding 180 6

This phase of the welding program gives the student a thorough knowledge of the various welding processes particularly metallic shielded arc, tungsten inert gas, and metal inert gas welding. A major share of the class time is devoted to actual welding practice. Specific attention is given to detailed study of the techniques of making welds in all positions using the electric arc, TIG and MIG welding applications. Lectures and discussion provide additional background information essential to a qualified welder.

8031 Electrical Fundamentals 60 3

A study of the relationship between voltage, current and resistance in electrical circuits, with emphasis on the use of high-current transformers in AC circuits. Special emphasis is placed on the production of heat as a result of current flow through resistance. Applied mathematics is also included.

8032 Industrial Materials 60 5

Internal stresses and deformation of elastic bodies resulting from external forces are studied. Tables of properties of engineering materials are used extensively. Analysis of simple and combined stresses relative to the properties of the materials to meet

COURSE DESCRIPTIONS Hours Credits

functional requirements. Laboratory work involves strength, hardness and durability of common industrial materials. Applied mathematics and communication skills are also included.

8040 Production and Resistance Welding 120 6

An in depth study of the use of both gas and arc welding in manufacturing and repetitive production operations. Special emphasis is placed on resistance spot welding techniques.

8041 Welding Equipment Maintenance 120 3

Construction, operation, maintenance, and troubleshooting of welding equipment will be covered. Evaluation of welding procedures and analyzing of the problems, recommendations and testing for improved welds will be covered. Applied mathematics is also included.

8042 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

8050 Welding Troubleshooting and Inspection 120 6

A study of the techniques for the evaluation and testing of welds and welding operations. Covered also are tolerance, fits, and allowances. Interchangeability is considered in relation to inspection procedures along with gauge inspection where appropriate. Applied mathematics and communications skills are also included.

8051 Ultrasonic and Non-Metallic Welding 60 4

An introduction to modern equipment and techniques utilized in the joining of non-metallic materials. Includes plastics, fiberglass, vacuum deposition, and dielectric heating for spot welding.

8052 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

APPLIED FIRE SCIENCE TECHNOLOGY

Modern fire fighting techniques require an intelligent, courageous, and dedicated fire fighter. To keep pace with the rapid technical changes and to cope with public service problems, a highly skilled fire fighter who is thoroughly prepared in fire science is necessary. The need for job upgrading to keep abreast of the technical standards of fire fighting is apparent in community fire departments. This two-year program is offered to help meet community needs for a high degree of fire service.

The Applied Fire Science program emphasizes the mastery of the appropriate subject skills and the acquisition of technical and general information necessary in the development of mature and knowledgeable judgment in fire fighting methods and techniques as well as administration.

Employment opportunities for the graduate of this program, provided he can pass the required medical and physical tests, would be with a local fire department, an industrial plant having safety and fire prevention departments or in a fire underwriter's group.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

APPLIED FIRE SCIENCE TECHNOLOGY

Associate Degree

FIRST QUARTER		Hours	Credits
5310	Introduction to Technical Communications	36	2
5311	Fundamentals of Mathematics	60	5
5312	Occupational Orientation	36	2
5313	Introduction to Fire Technology	60	4
5314	Fire Apparatus I	72	4
		264	17

SECOND QUARTER			
5320	Technical Communication Skills	36	2
5321	Human Relations	36	3
5322	Electricity	72	4
5323	Fire Apparatus II	72	4
5324	Fire Department Hydraulics	72	4
		288	17

THIRD QUARTER			
5330	Oral Communications	24	2
5331	Fire Alarm and Communications System	36	2
5332	Fire Fighting Strategy and Tactics	72	4
5333	Fire Protection Equipment and Systems	36	2
	Restricted Electives*	72	6
		240	16

FOURTH QUARTER			
5340	Chemistry I	60	4
5341	Psychology	36	3
5342	Hazardous Materials I	48	3
5343	Rescue Practices and Procedures	72	4
	Restricted Electives*	36	3
		252	17

FIFTH QUARTER			
5350	Chemistry II	60	4
5351	Industrial Safety and Fire Control	36	3
5352	Hazardous Materials II	60	4
5353	Fire Investigations	48	3
	Restricted Electives*	36	3
		240	17

SIXTH QUARTER			
5360	Technical Reporting	36	3
5361	Fire Service Organization and Management	36	3
5362	Fire Department Specifications	72	4
5363	Fire Prevention and Inspection	36	2
5364	Legal Problems in Fire Service	36	3
		216	15

Total Contact Hours: 1,500
Total Credits: 99

*Restricted Electives:

5391	Techniques of Supervision I	36	3
5392	Mechanical and Electrical Equipment	36	3
5393	Building Materials	36	3
5394	Aircraft Fire Protection and Rescue Procedures	122	8
5395	Typewriting I	36	3

COURSE DESCRIPTIONS

5310 Introduction to Technical Communications — 36 hours, 2 credits

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

5311 Fundamentals of Mathematics — 60 hours, 5 credits

This course is a combination of Fundamental Arithmetic and Fundamentals of Algebra.

5312 Occupational Orientation — 36 hours, 2 credits

Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields. Enrollment in the course is recommended in the first quarter the student enters the College.

5313 Introduction to Fire Technology — 60 hours, 4 credits

An introductory course reviewing the fire problems and broadly touching various phases of the fire technology field, includes characteristics and behavior of fire, hazardous properties of materials. The NFPA *Fire Protection Handbook* is used as this text.

5314 Fire Apparatus I — 72 hours, 4 credits

This course to include driving techniques, construction and operation of pumping engines.

COURSE DESCRIPTIONS Hours Credits

5320 Technical Communication Skills 36 2

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

5321 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

5322 Electricity 72 4

This course is a study of the basic concepts required of the electrical worker. Particular emphasis is placed on the concept of series circuits, parallel circuits, series parallel combination circuits and Ohm's Law. The basic definition of electromotive force, current and resistance receive special attention.

5323 Fire Apparatus II 72 4

This course includes construction and operation of aerial ladders, aerial platforms, specialized equipment and maintenance. The IFSTA *Manual 106* will be used as the text.

5324 Fire Department Hydraulics 72 4

Review of basic mathematics; hydraulic laws and formulas as applied to the fire service.

5330 Oral Communications 24 2

Through intensive training in informative, persuasive and special purposes presentation, speech skills are developed.

5331 Fire Alarm and Communications Systems 36 2

Fundamentals of municipal and local alarm systems, heat, smoke, flame detectors, telephone, teletype and radio systems.

5332 Fire Fighting Strategy and Tactics 72 4

Pre-plan for fires, combined operations, mutual aid, disaster planning and problems in unusual fire operations.

5333 Fire Protection Equipment and Systems 36 2

Portable fire extinguishing equipment; sprinkler systems; protective alarm and detection systems.

5340 Chemistry I 60 4

An introductory study of chemical operations, the atom, the elements, molecules, chemical bonding and properties of matter is made.

5341 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

5342 Hazardous Materials I 48 3

A review of the basic chemistry, storage, handling laws, standards and fire fighting practices pertaining to hazardous materials.

5343 Rescue Practices and Procedures 72 4

Rescue practices, the human body, emergency care of victims, childbirth, artificial respiration. This course also includes procedures on aircraft rescue and fire fighting, and the fire department's responsibilities in protection of evidence at the scene of an aircraft incident.

COURSE DESCRIPTIONS Hours Credits

5350 Chemistry II 60 4

A study of the principles of theory of chemistry including solutions, acids and bases, chemical kinetics and equilibrium and an introduction to organic chemistry, biochemistry and industrial chemistry is made.

5351 Industrial Safety and Fire Control 36 3

This course covers considerations of managerial and supervisory responsibility for fire and accident prevention, covers the investigation of accidents, preparation of accident reports, machine guarding, the use of personnel protective equipment, conformity to state industrial accident code and fire regulations, provision for first aid, the use of safety committees, and the methods of developing, advertising and promoting a good safety and fire prevention program.

5352 Hazardous Materials II 60 4

Continuation of the study of hazardous materials.

5353 Fire Investigation 48 3

Introduction to arson and incendiarism, arson law.

5360 Technical Reporting 36 3

Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

5361 Fire Service Organization and Management 36 3

Consideration of basic concepts and principles of administration applicable to the organization and administration of efficient fire departments.

5362 Fire Department Specifications 72 4

Preparation of specifications for apparatus, hose and minor equipment, and fire station specifications.

5363 Fire Prevention and Inspection 36 2

Organization and function of the fire prevention organization; inspections surveying and mapping procedures.

5364 Legal Problems in the Fire Service 36 3

Laws governing the organization and operation of fire departments, liability, mutual aid, arson, fire prevention, building construction, etc.

5391 Techniques of Supervision I 36 3

This course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducting new employees, and evaluation of employee performance.

5392 Mechanical and Electrical Equipment 36 3

Students study the mechanical and electrical systems in a structure. Plumbing, heating and cooling and electrical systems will be studied. Mechanical and electrical drawings will be studied.

5393 Building Materials 36 3

This course covers the basic architectural and structural construction materials and their applications. Building materials will be considered for usability and cost feasibility.

COURSE DESCRIPTIONS	Hours	Credits
5394 Aircraft Fire Protection and Rescue Procedures	122	8

This course includes both the theory and practice in the operation of airport fire equipment and the use of water fog lines, both high-pressure and low velocity fog applications, use of special agents, and the various methods of application of agents. Special emphasis is placed on rescue methods and equipment, as well as the unique fire hazards of aircraft and their cargo.

COURSE DESCRIPTIONS	Hours	Credits
5395 Typewriting I	36	3

A course for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

CARPENTER APPRENTICESHIP

This program provides the carpenter apprentice with the necessary classroom work to support his on-the-job training experiences.

Apprenticeship programs are sponsored by contractor-labor union joint apprenticeship committees. Applications must be made to the appropriate apprenticeship committee. Further information may be obtained from the regional institutes offering apprenticeship programs.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

CARPENTER APPRENTICESHIP

Special Program

		Hours	Credits
FIRST QUARTER			
8510	Arithmetic	2.5	2.5
8511	Tools, History and Ethics	2.5	2.5
		5.0	5.0
SECOND QUARTER			
8512	Safety (O.S.H.A.)	3.0	2.0
8513	Sketching	2.5	1.5
8514	Formulas	2.5	2.5
		8.0	6.0
THIRD QUARTER			
8520	Equations	2.5	2.5
8521	Mechanical Drawing	2.5	1.5
		5.0	4.0
FOURTH QUARTER			
8522	Blueprint Symbols and Abbreviations	2.5	2.5
8523	Steel Square	2.5	2.5
		5.0	5.0
FIFTH QUARTER			
8530	Residential Blueprint Reading for Carpenters	2.5	2.5
8531	Rafter Cuts and Roofs	2.5	1.5
		5.0	4.0
SIXTH QUARTER			
8532	Commercial Blueprint Reading for Carpenters	2.5	2.5
8533	Rough Framing	2.5	2.5
		5.0	5.0
SEVENTH QUARTER			
8540	Building Foundations	2.5	2.5
8541	Interior Finishing	2.5	2.5
		5.0	5.0
EIGHTH QUARTER			
8542	Building Materials, Acoustics and Dry Wall Sections	2.5	2.5
8543	Finishing Trim	2.5	2.0
		5.0	4.5
NINTH QUARTER			
8550	Building Codes	2.5	2.5
8551	Exterior and Miscellaneous Finishing and Shop Practices	3.5	2.0
		6.0	4.5
TENTH QUARTER			
8552	Surveying (Transit-level)	2.5	2.5
	Restricted Elective°	2.5	2.5
		5.0	5.0
ELEVENTH QUARTER			
8560	Surveying Field Problems	0.9	0.5
8561	Welds and Welding Equipment	1.6	1.2
	Restricted Elective°	2.5	2.5
		5.0	4.2
TWELFTH QUARTER			
8562	Arc and Acetylene Welding	2.5	1.5
	Restricted Elective°	2.5	2.5
		5.0	4.0

Total Credits: 54.7

°Restricted Electives:

8590	Blueprints	2.5	2.5
8591	Millwork	2.5	1.5
8592	Seminar in Carpentry	2.5	2.5
8593	Specifications	2.5	2.5
8594	Cabinet Making	2.5	1.5
8595	Advanced Cabinet Making	2.5	1.5
8596	Stair Making	2.5	1.5
8597	Forms and Reinforced Concrete Framing	4.5	2.5

COURSE DESCRIPTIONS — Hours — Credits

8510 Arithmetic — 2.5 — 2.5

This course is designed to develop in the student an understanding of mathematics fundamentals applied to the student's area of concentration, including addition, subtraction, multiplication, division and fractions, decimals, factoring, and cancellations.

8511 Tools, History and Ethics — 2.5 — 2.5

This course is designed to develop a knowledge and understanding of the history of the carpentry trade, hand tools used in the trade and the relationship of carpentry to the labor union structure with heavy emphasis on the Brotherhood of Carpenters and Jointers, and the traditions of craftsmen. Efforts will be made to inspire love of craftsmanship and a sense of pride in the profession.

8512 Safety (O.S.H.A.) — 3.0 — 2.0

This course covers considerations and planning for individual, managerial and supervisory responsibility for fire and accident prevention covering topics such as the identification and removal of hazards, investigation of accidents, preparation of accident reports, the use of personnel protective equipment, conformity to state safety codes and fire regulations, provisions for first aid, the use of safety committees and methods of developing, advertising and promoting a good safety and fire prevention program. Included also are work habits, housekeeping, lifting and carrying, scaffolds, ladders, demolition and hand and power tools.

COURSE DESCRIPTIONS Hours Credits

8513 Sketching 2.5 1.5

This course is designed to prepare the student to read and interpret detailed blueprints on the job and to apply them in accomplishing his assigned task.

8514 Formulas 2.5 2.5

This course is designed to provide a background in denominate numbers, roots, powers, ratios and an introduction to equations and derivations of formulas.

8520 Equations 2.5 2.5

This course is designed to further develop the basic mathematical processes needed in the student's area of concentration. Studies include equations, mensuration and an introduction to logarithms.

8521 Mechanical Drawing 2.5 1.5

This course is designed to develop a functional knowledge of the processes of mechanical drawing necessary for all craftsmen, supporting project organization which is the basis of job planning, concentrating on concepts. This course is to provide a background of knowledge which will undergird mechanical drawing processes and architectural drawing.

8522 Blueprint Symbols and Abbreviations 2.5 2.5

This course is designed to provide a basic knowledge of simple blueprints, to include signs, symbols, scales, dimensions and abbreviations of information will be interpreted and converted to logical information.

8523 Steel Square 2.5 2.5

This course is designed to provide the background for the carpenter's use for one of the great working aids of the carpenter, the steel square, including the use of all scales and a great deal about roof types and styles.

8530 Residential Blueprint Reading for Carpenters 2.5 2.5

This course covers Basic Blueprint reading for carpenters and an introduction to estimating to include: material and labor estimating, purchasing procedures, contracts, sub-contracts, insurance, taxes, advertising codes and permits.

8531 Rafter Cuts and Roofs 2.5 1.5

This course covers basic problem solving related to roofs and building layouts using the steel square.

8532 Commercial Blueprint Reading for Carpenters 2.5 2.5

This is an advanced course in blueprint reading for carpenters, utilizing prints for large structures and involving the special reading skills used in commercial designs.

8533 Rough Framing 2.5 2.5

This course is designed to provide in depth knowledge of the acceptable and recognized methods and techniques of framing walls, floors, roofs and foundations on the job. Form construction and manipulative shop skills will be included.

8540 Building Foundations 2.5 2.5

This course is designed to further develop basic knowledge and technical information such as: soil bearing qualities, piles, footings and cassions, concrete, steel, glass, and plastics that are used in building.

8541 Interior Finishing 2.5 2.0

This course gives in depth coverage of the accepted methods, techniques and manipulative skills needed for interior finishing and trim.

COURSE DESCRIPTIONS Hours Credits

8542 Building Materials, Acoustics and Dry Wall Sections 2.5 2.5

This course is designed to cover building materials, acoustics and dry wall sections, including: ceiling systems, in-shop layout and construction.

8543 Finishing Trim 2.5 2.0

This course covers floors and floor covering, cabinet hanging, fireplace and mantel trim, built-in fixtures, screen hanging, installation of hardware, door and trim framing, insulation and cornice construction.

8550 Building Codes 2.5 2.5

This course is designed to acquaint the student with the building codes, rules and regulations relating to the building trades, including: building permits, penalties, boards of appeals, minimum requirements related to lighting, ventilation, safety, space, access, ceiling heights, doors, stairways, fire limits, foundations, masonry materials, reinforcement and other related constraints.

8551 Exterior and Miscellaneous Finishing and Shop Practice 3.5 2.0

This course covers exterior finishing, to include fastening devices, shingles, roofing, wall covering, sidings, louvers, overhead doors and in-shop layout and construction.

8552 Surveying (Transit-level) 2.5 2.5

This course is designed to develop a basic knowledge of surveying instruments and their applications for layout and measurement. Use and care of the instrument as well as systematic means of recording information.

8560 Surveying Field Problems 0.9 0.5

This course deals with surveying problems in the field such as: set up methods and techniques, hand signals, straight line methods, corners, setting grades, computing elevations, angles and related problems.

8561 Welds and Welding Equipment 1.6 1.2

This course covers the fundamentals of arc and gas welding, brazing, cutting and tacking of construction grade metals. Emphasis will be placed on the characteristics of metals and welds, types of welds, safety and welding, welding equipment, applications and control.

8562 Arc and Acetylene Welding 2.5 1.5

This course deals with arc and acetylene welding, emphasizing manipulative skills, in the development of refined methods and techniques of joining and cutting metals.

8590 Blueprints 2.5 2.5

This course is designed to provide an in depth study of commercial prints, specifications, building codes, zoning restrictions, work scheduling, labor problems, public relations, estimating, and material ordering that might arise on a large job.

8591 Millwork 2.5 1.5

This course covers the basic knowledge and skills involved with the use of milling machinery, including: the radial arm saw, jointer, planer, shaper, band saw, lath and drill press. Safety is stressed at all times.

8592 Seminar in Carpentry 2.5 2.5

A professional carpentry course which may cover any and all special trade related problems. The instructor may assign in special projects or field study problems relating to the trades.

COURSE DESCRIPTIONS	Hours	Credits
8593 Specifications	2.5	2.5

This course shall teach the writing of specifications and the necessary blueprint interpretation. The student must refer to federal, state and local building codes and zoning requirements to complete the course.

8594 Cabinet Making	2.5	1.5

This course shall cover the manipulative skills involved in the art of constructing and hanging cabinet-type built-in fixtures.

8595 Advanced Cabinet Making	2.5	1.5

This course shall take the student through the actual construction and hanging of a cabinet. He shall design, build and hang the cabinet.

COURSE DESCRIPTIONS	Hours	Credits
8596 Stair Making	2.5	1.5

This student shall learn the layout and construction of all types of stairs; from work, reinforcement, straight rise and span, and spiral stair casing will be covered.

8597 Forms and Reinforced Concrete Framing	4.5	2.5

This course shall cover in depth the design and construction of all forms for reinforced concrete construction, tilt ups, post and beam, post tension, pre-stressed, slip form and straight pour construction techniques.

CULINARY ARTS CAREERS

Millions of Americans "eat out" every day, and the demand for people trained in culinary arts is many times greater than the supply.

Eating places vary from roadside diners to plush restaurants with exotic atmospheres. Most are independent businesses with fewer than ten employees.

A manager is responsible for the entire operation of an establishment. He coordinates and directs the work of chefs, cooks, waiters, waitresses, kitchen helpers and other employees to insure that the food is prepared properly and served promptly. He also makes sure the health and sanitation regulations are observed.

Supervisor positions can be found in dining rooms and cafeterias in schools, colleges, hotels, department stores, factories, hospitals, nursing homes, private clubs and in public restaurants.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

CULINARY ARTS CAREERS

Associate Degree

FIRST QUARTER		Hours	Credits
3410	Occupational Orientation	36	2
3411	Mathematics of Finance	60	5
3412	Introduction to Volume Food Preparation	108	5
3413	Introduction to Hotel-Motel Management	36	3
3414	Introduction to Volume Food Service	36	2
		276	17

SECOND QUARTER			
3420	Introduction to Technical Communications	36	2
3421	Nutrition I	24	2
3422	Volume Food Preparation	108	5
3423	Human Relations	36	3
3424	Volume Food Service	36	2
		240	14

THIRD QUARTER			
3430	Psychology	36	3
3431	Oral Communications	24	2
3432	Food and Beverage Management and Services	36	3
3433	Food Production Principles	24	2
3434	Institutional Foods Preparation	108	5
3435	Institutional Foods Service	36	2
		264	17

FOURTH QUARTER			
3440	Business Communications	36	3
3441	Food and Beverage Purchasing and Services	36	3
3442	Motel-Motor Hotel Management	24	2
3443	Gourmet Food Preparation	132	6
3444	Gourmet Food Service	36	2
		264	16

FIFTH QUARTER			
3450	Economics	36	3
3451	Techniques of Supervision I	36	3
3452	Gourmet Specialties Preparation	132	6
3453	Accounting I	48	4
3454	Gourmet Specialties Service	36	2
		288	18

SIXTH QUARTER			
3460	Field Project and/or Case Study	48	4
3461	Seminar in Occupations	36	2
3462	Gourmet Buffet Preparation	132	6
3463	Business Law I	36	3
3464	Gourmet Buffet Service	36	2
		288	17

Total Contact Hours: 1,620
Total Credits: 99

COURSE DESCRIPTIONS

3410 Occupational Orientation — 36 hours, 2 credits

Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields. Enrollment in the course is recommended in the first quarter the student enters the College.

3411 Mathematics of Finance — 60 hours, 5 credits

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

3412 Introduction to Volume Food Preparation — 108 hours, 5 credits

Fundamentals of cooking learned through lectures and lab work cooking. Fundamentals are covered that apply to all cooking and are requisite to progress in the cooking field. The student is given the how and why of all training to include personal hygiene, sanitation and safety. Basic menu writing and balancing meals as well as the knowledge needed for progressive steps in preparing completed meals.

3413 Introduction to Hotel-Motel Management — 36 hours, 3 credits

This course traces the growth and development of the lodging industry from early inns to modern skyscraper hotels and highway motels; the organization of hotel operations; opportunities and future trends.

3414 Introduction to Volume Food Service — 36 hours, 2 credits

This course stresses the steps taken in getting the completed meal to the customer in the fastest and best manner while retaining quality, using various types of table setups. The types of service covered are American, French, Russian, and others. Waiter training is important and emphasized. Busing, cleaning and resetting of dining room, kitchen cleanup, dishwashing and sanitation are all stressed. Proper storage of all portable equipment is a continuing daily practice throughout the program.

3420 Introduction to Technical Communications 36 2

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

3421 Nutrition I 24 2

This is an introductory course in nutrition which covers determination of individual requirements for energy protein, minerals, and vitamins; foods as a source of daily requirements, and the relationship of food and nutrition to optimal physical fitness.

3422 Volume Food Preparation 108 5

Introduction into methods of preparing foods in volume for large feeding operations, equations for raising or lowering recipes, mathematics used to determine per portion costs so as to determine a profitable selling price are covered. Preparation of volume foods, methods of retaining top quality in prepared foods until dispersement, timing of activities to have products ready just prior to service and the limitation of menu items in this type of food service.

3423 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

3424 Volume Food Service 36 2

Methods used to dispense volume foods: cafeteria table service, wagon service, in-plant feeding, sanitation and cleanup procedures necessitated by volume feeding.

3430 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

3431 Oral Communications 24 2

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

3432 Food and Beverage Management and Services 36 3

Covers the entire food and beverage operations from purchasing, receiving and storage to preparation and service.

3433 Food Production Principles 24 2

This course is designed to teach those with management responsibilities how to produce quality foods in quantity.

3434 Institutional Foods Preparation 108 5

For institutions such as colleges, universities, hospitals, factories, nursing homes and other institutions feeding on large scale with multiple choice menus. This course covers figuring total food preparation predicted on highest possible number of customers and reducing this by percentage figures from same time previous month and previous year; percentage of popularity of each menu item from the same records and the effect of weather upon sales. Marketing for good sales potential of available food and meals based on popularity of the items. Multiple entres meals are prepared based on the above methods.

COURSE DESCRIPTIONS Hours Credits

3435 Institutional Foods Service 36 2

Cafeteria and dining room service, cart service, prepared tray service and portable hot cart service. Cleanup and sanitation entailed in all of the above methods.

3440 Business Communications 36 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

3441 Food Beverage Purchasing and Services 36 3

A detailed study of the major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages, poultry and eggs, fish and shell fish, meats and alcoholic beverages.

3442 Motel-Motor Hotel Management 24 2

A unit of study designed for operators of smaller properties, which is designed to provide a thorough understanding of many administrative techniques required to manage today's motel. Topics covered include the history and nature of motel business, financial considerations, space utilization, sales promotion, guest relations, guest room facilities, food and beverage facilities, accounting records, interpreting financial statements and administrative control.

3443 Gourmet Food Preparation 132 6

Student makes the transition from the volume type food preparation to the gourmet foods, where the highest quality of food is prepared and each dish is a challenge for the student to meet. Smaller or individual dish preparation is the mode and each student takes his turn in leading the operation in gourmet preparation. Marketing, menu writing, recipe research and methods are done by the class as well as preparation and the potentials of showmanship are used.

3444 Gourmet Food Service 36 2

The white linen formal dining individual presentation by the waiters, eating and the critique are stressed. Standard cleanup procedures are covered.

3450 Economics 36 3

Economics includes an analysis of national income accounts, the operation of the monetary and banking system and a survey of international economic problems.

3451 Techniques of Supervision I 36 3

This course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducting new employees and evaluation of employee performance.

3452 Gourmet Specialties Preparation 132 6

Continuation of gourmet cooking with special attention to fanciwork on hors d'oeuvres, cake decoration, garnishes, outstanding salads and dressings, unusual vegetables and exquisite sauce and high quality bakery products. Special attention is given to every phase of the gourmet meal to include napkin folding, decorative butter, vegetable flowers, relishes, etc.

3453 Accounting 48 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting; collecting, summarizing, analyzing and reporting

information about service and mercantile enterprises. Included are practical applications of the principles learned.

3454 Gourmet Specialties Service 36 2

This course includes hors d'oeuvres service, main course service, and a waiter service for each small table, and provides for show presentation of each course of the meal including flaming or fancy desserts. Standard cleanup procedures.

3460 Field Project and/or Case Study 48 4

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

3461 Seminar in Occupations 36 2

In this course which is designed to equip the student for a smooth transfer from training to the world of work, resource persons representing industrial and business organizations discuss locating jobs, job applications and interviews, preparation of credentials, human relations, employer-employee expectations, personal grooming and appearance, labor laws, union membership, taxes, insurance, liability, trade and professional associations and organizations, occupational journals, further training and job upgrading.

COURSE DESCRIPTIONS Hours Credits

3462 Gourmet Buffet Preparation 132 6

This course covers buffet as a showcase of talents, including menu writing, centerpiece design and preparation utilizing such items as decorated food, carved ice or carved styrofoam, buffet layout according to exact specifics, the number and type of dishes, available refills, hot and cold, and devised methods of keeping the table neat at all times are emphasized. Research is done in the books of the buffet masters as to best dishes, best methods of preparation, best display and eating quality.

3463 Business Law I 36 3

This course includes the study of the nature and sources of business law, a description of the Judicial System and the nature of Torts and Crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

3464 Gourmet Buffet Service 36 2

Buffet setting supervisory assignment of tasks to be performed such as the number of cook attendants behind the buffet line to care and/or serve, assignment of runners to keep buffet filled and cooks in kitchen to keep food coming are covered. Other content covered: responsibility of the host, traffic flow patterns, greeting and seating of guests, as needed to include supervision of cleaning tables and the serving of dessert and beverage, determination of salvageable foods and the storage of remaining food and supervisory responsibilities related to cleanup and sanitation.

CULINARY SERVICES

Eating places vary from roadside diners to plush restaurants with exotic atmospheres. Most are independent businesses with fewer than ten employees.

Supervisory positions can be found in dining rooms and cafeterias in schools, colleges, hotels, department stores, factories, hospitals, nursing homes, private clubs and in public restaurants.

The graduate of this program will be qualified for employment as a caterer, soups chef, cook, storekeeper, purchasing agent, pastry cook, pastry chef or manager-trainee.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

CULINARY SERVICES

Technical Certificate

FIRST QUARTER		Hours	Credits
3510	Occupational Orientation	36	2
3511	Mathematics of Finance	60	5
3512	Introduction to Volume Food Preparation	108	5
3513	Introduction to Hotel-Motel Management	36	3
3514	Introduction to Volume Food Service	36	2
		276	17

SECOND QUARTER			
3520	Introduction to Technical Communications	36	2
3521	Nutrition I	24	2
3522	Volume Food Preparation	108	5
3523	Human Relations	36	3
3524	Volume Food Service	36	2
		240	14

THIRD QUARTER			
3530	Psychology	36	3
3531	Oral Communications	24	2
3532	Food and Beverage Management and Services	36	3
3533	Food Production Principles	24	2
3534	Institutional Foods Preparation	108	5
3535	Institutional Foods Service	36	2
		264	17

Total Contact Hours: 780
Total Credits: 48

COURSE DESCRIPTIONS

3510 Occupational Orientation — 36 hours, 2 credits

Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

3511 Mathematics of Finance — 60 hours, 5 credits

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

COURSE DESCRIPTIONS

3512 Introduction to Volume Food Preparation — 108 hours, 5 credits

Fundamentals of cooking learned through lectures and lab work cooking. Fundamentals are covered that apply to all cooking and are requisite to progress in the cooking field. The student is given the how and why of all training to include personal hygiene, sanitation and safety. Basic menu writing and balancing meals as well as the knowledge needed for progressive steps in preparing completed meals.

3513 Introduction to Hotel-Motel Management — 36 hours, 3 credits

This course traces the growth and development of the lodging industry from early inns to modern skyscraper hotels and highway motels; the organization of hotel operations; opportunities and future trends.

3514 Introduction to Volume Food Service — 36 hours, 2 credits

This course stresses the steps taken in getting the completed meal to the customer in the fastest and best manner while retaining quality, using various types of table setups. The types of service covered are American, French, Russian and others. Waiter training is important and emphasized. Busing, cleaning and resetting of dining room, kitchen cleanup, dishwashing and sanitation are all stressed. Proper storage of all portable equipment is a continuing daily practice throughout the program.

3520 Introduction to Technical Communications — 36 hours, 2 credits

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

3521 Nutrition I — 24 hours, 2 credits

This is an introductory course in nutrition which covers determination of individual requirements for energy protein, minerals, vitamins; foods as a source of daily requirements, and the relationship of food and nutrition to optimal physical fitness.

3522 Volume Food Preparation — 108 hours, 5 credits

Introduction into methods of preparing foods in volume for large feeding operations, equations for raising or lowering recipes, math used to determine per portion costs so as to determine a profitable selling price are covered. Preparation of volume foods, methods of retaining top quality in prepared foods until dispersement, timing of activities to have products ready just prior to service and the limitation of menu items in this type of food service.

3523 Human Relations — 36 hours, 3 credits

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

3524 Volume Food Service — 36 hours, 2 credits

Methods used to dispense volume foods; cafeteria table service, wagon service, in-plant feeding, sanitation and cleanup procedures necessitated by volume feeding.

COURSE DESCRIPTIONS	Hours	Credits

3530 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

3531 Oral Communications 24 2

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

3532 Food and Beverage Management and Services 36 3

Covers the entire food and beverage operations from purchasing, receiving and storage to preparation and service.

3533 Food Production Principles 24 2

This course is designed to teach those with management responsibilities how to produce quality foods in quantity.

COURSE DESCRIPTIONS	Hours	Credits

3534 Institutional Foods Preparation 108 5

For institutions such as colleges, universities, hospitals, factories, nursing homes and other institutions feeding on large scale with multiple choice emnus. This course covers figuring total food preparation predicted on highest possible number of customers and reducing this by percentage figures from same time previous month and previous year; percentage of popularity of each menu item from the same records and the effect of weather upon sales. Marketing for good sales potential of available food and meals based on popularity of the items. Multiple entres meals are prepared based on the above methods.

3535 Institutional Foods Service 36 2

Cafeteria and dining room service, cart service, prepared tray service and portable hot cart service. Cleanup and sanitation entailed in all of the above methods.

Modern fire fighting techniques require an intelligent, courageous, and dedicated fire fighter. To keep pace with the rapid technical changes and to cope with public service problems, a skilled fire fighter, thoroughly prepared, is necessary. The need for job upgrading to keep abreast of the technical standards of fire fighting is apparent in community fire departments.

The Fire Protection program emphasizes the mastery of the appropriate subject skills and the acquisition of technical information necessary in the development of mature and knowledgeable judgment in fire fighting methods and techniques.

Employment opportunities for the graduate of this program, provided he can pass the required medical and physical tests, would be with a local fire department or an industrial plant having safety and fire prevention departments.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

FIRE PROTECTION
Technical Certificate

FIRST QUARTER		Hours	Credits
6710	Introduction to Technical Communications	36	2
6711	Fundamentals of Mathematics	60	5
6712	Occupational Orientation	36	2
6713	Introduction to Fire Technology	60	4
6714	Fire Apparatus I	72	4
		264	17

SECOND QUARTER			
6720	Technical Communication Skills	36	2
6721	Human Relations	36	3
6722	Electricity	72	4
6723	Fire Apparatus II	72	4
6724	Fire Department Hydraulics	72	4
		288	17

THIRD QUARTER			
6730	Oral Communications	24	2
6731	Fire Alarm and Communication Systems	36	2
6732	Fire Fighting Strategy and Tactics	72	4
6733	Fire Protection Equipment and Systems	36	2
	Restricted Electives*	72	6
		240	16
	Total Contact Hours:		792
	Total Credits:		50

*Restricted Electives:

6795	Typewriting I	36	3
5391	Techniques of Supervision I	36	3
5392	Mechanical and Electrical Equipment	36	3
5393	Building Materials	36	3
5394	Aircraft Fire Protection and Rescue Procedures	122	8

FIRE PROTECTION

COURSE DESCRIPTIONS

6710 Introduction to Technical Communications — 36 Hours — 2 Credits

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

6711 Fundamentals of Mathematics — 60 Hours — 5 Credits

This course is a combination of fundamental Arithmetic and Fundamentals of Algebra.

6712 Occupational Orientation — 36 Hours — 2 Credits

Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

6713 Introduction to Fire Technology — 60 Hours — 4 Credits

An introductory course reviewing the fire problems and broadly touching various phases of the fire technology field, includes characteristics and behavior of fire, hazardous properties of materials. The NFPA *Fire Protection Handbook* is used in this text.

6714 Fire Apparatus I — 72 Hours — 4 Credits

This course to include driving techniques, construction and operation of pumping engines.

6720 Technical Communication Skills — 36 Hours — 2 Credits

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

6721 Human Relations — 36 Hours — 3 Credits

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

6722 Electricity — 72 Hours — 4 Credits

This course is a study of the basic concepts required of the electrical worker. Particular emphasis is placed on the concept of series circuits, parallel circuits, series parallel combination circuits and Ohm's Law. The basic definition of electromotive force, current and resistance receive special attention.

6723 Fire Apparatus II — 72 Hours — 4 Credits

This course includes construction and operation of aerial ladders, aerial platforms, specialized equipment and maintenance. The IFSTA *Manual 106* will be used as the test.

6730 Oral Communications — 24 Hours — 2 Credits

Through intensive training in informative, persuasive and special purposes presentation, speech skills are developed.

6731 Fire Alarm and Communications Systems — 36 Hours — 2 Credits

Fundamentals of municipal and local alarm systems, heat, smoke flame detectors, telephone, teletype and radio systems.

COURSE DESCRIPTIONS	Hours	Credits

6732 Fire Fighting Strategy and Tactics 72 4

Pre-plan for fires, combined operations, mutual aid, disaster planning and problems in unusual fire operations.

6733 Fire Protection Equipment and Systems 36 3

Portable fire extinguishing equipment; sprinkler systems; protective alarm and detection systems.

6795 Typewriting I 36 3

A course for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

5391 Techniques of Supervision I 36 3

This course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducting new employees, and evaluation of employee performance.

COURSE DESCRIPTIONS	Hours	Credits

5392 Mechanical and Electrical Equipment 36 3

Students study the mechanical and electrical systems in a structure. Plumbing, heating and cooling and electrical systems will be studied. Mechanical and electrical drawings will be studied.

5393 Building Materials 36 3

This course covers the basic architectural and structural construction materials and their applications. Building materials will be considered for usability and cost feasibility.

5394 Aircraft Fire Protection and Rescue Procedures 122 8

This course includes both the theory and practice in the operation of airport fire equipment and the use of water fog lines, both high-pressure and low velocity fog applications, use of special agents, and the various methods of application of agents. Special emphasis is placed on rescue methods and equipment, as well as the unique fire hazards of aircraft and their cargo.

GROUND WATER SPECIALIST

This program is designed to provide qualified individuals to participate in the critical development and management of our nation's underground water resources. With surface water supplies being repeatedly depleted in quantity and quality, the use of our vast ground water reserves will double and perhaps triple during the coming decade. Trained specialists are needed in the fields of water well construction technology, well and pump maintenance and repair as well as municipal ground water systems operation.

The one-year curriculum leading to the Ground Water Specialist Certificate contains a balanced training in mechanical and electrical theory and practice, water well construction skills and techniques as well as fundamental training in geology, hydrology and water hygiene.

The ground water program has been established in cooperation with the National Water Well Association and leads to eligibility for NWWA certifications as well drilling and pump installation specialist.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

GROUND WATER SPECIALIST
Technical Certificate

FIRST QUARTER		Hours	Credits
6910	Occupational Orientation	36	2
6911	Fundamentals of Mathematics	60	5
6912	Hydraulic and Pneumatics	36	2
6913	Drilling Equipment: Operation and Maintenance	84	5
6914	Hydrogeology for Well Drillers	48	4
		264	18

SECOND QUARTER			
6920	Electricity	72	4
6921	Internal Combustion Engines	60	3
6922	Pump Theory and Maintenance	60	4
6923	Water Conditioning Requirements and Systems	24	2
6924	Well Construction, Development and Maintenance	48	4
		264	17

THIRD QUARTER			
6930	Introduction to Technical Communications	36	2
6931	Welding for Related Trades I	72	4
6932	Human Relations	36	3
6933	Record Keeping and Business Economics	24	2
6934	Field Drilling, Site Selection, Set-up and Operation	72	4
6935	Sanitary Aspects of Water Well Technology	24	2
		264	17

Total Contact Hours: 792
Total Credits: 52

COURSE DESCRIPTIONS

6910 Occupational Orientation — 36 hours, 2 credits

Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

6911 Fundamentals of Mathematics — 60 hours, 5 credits

This course is a combination of Fundamental Arithmetic and Fundamentals of Algebra.

6912 Hydraulics and Pneumatics — 36 hours, 2 credits

This course covers fundamentals of fluid power including principles, functions, terminology and symbols of hydraulics and pneumatics.

6913 Drilling Equipment: Operation and Maintenance — 84 hours, 5 credits

This course offers both the classroom and the "hands on" approach in the prescribed methods of operation and maintenance for the fundamental tools and equipment utilized in the construction and development of a ground water supply.

6914 Hydrogeology for Well Drillers — 48 hours, 4 credits

This will be a basic introduction to geology as it relates to underground water and its occurrence, characteristics, behavior and movement beneath the earth's surface. The hydrologic cycle will be analyzed, including the continuous movement of water from ocean to the sky through evaporation, back to the land surface as rain, into the underground and finally back to the ocean. This course presents an overall view of a complex technical subject in a simplified manner with concentration on the basic principles as they relate to water well construction.

6920 Electricity — 72 hours, 4 credits

This course is a study of the basic concepts required of the electrical worker. Particular emphasis is placed on the concept of series circuits parallel circuits, series parallel combination circuits and Ohm's Law. The basic definitions of electromotive force, current and resistance receive special attention.

6921 Internal Combustion Engines — 60 hours, 3 credits

A course in basic components of an engine. Emphasis is placed on how each component relates to the engine as a whole.

6922 Pump Theory and Maintenance (Water Well Systems) — 60 hours, 4 credits

This course will deal with the functional theory and installation techniques necessary for the operation of domestic, industrial and municipal pumping systems. Basic physical principles behind various pumping methods will be studied along with the procedures which must be followed for determination of pump size and type for particular job requirements. A "hands on" approach will be followed in pump installation training wherein students will unpack, install, align, test, maintain and repair pumping equipment.

6923 Water Conditioning Requirements and Systems — 24 hours, 2 credits

The student will learn the need for and benefits of conditioned and treated water, both for human consumption and

industrial applications. Various methods and types of equipment required to condition water will be studied and evaluated. The course will provide basic knowledge of water conditioning for domestic, commercial, industrial and municipal applications, covering such subjects as the elimination of bacteria and the reduction of iron, sulphur, phosphate, salinity and water hardness.

6924 Well Construction, Development and Maintenance 48 4

This course will deal with the basic methods of well construction including cable tool, rotary, reverse rotary, as well as jetting, boring and augering. The relationship between the various drilling methods and the subsurface geologic conditions encountered will be studied. Emphasis will be placed on development of wells for optimum water production and proper maintenance to insure continuity and longevity of the water supply.

6930 Introduction to Technical Communications 36 2

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

6931 Welding for Related Trades I 72 4

This course is an introduction to the area of arc and oxyacetylene welding. The fundamental principles of joining ferrous metals are studied and demonstrated. Basic welding processes, equipment operation, and safety procedures are practiced in the laboratory work. Emphasis is given to welding procedures and practice in the major area of work such as machine shop, automotive and sheet metal.

COURSE DESCRIPTIONS Hours Credits

6932 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

6933 Record Keeping and Business Economics 24 2

This course teaches the reasons for and the methods of basic record keeping in both the technical areas of well construction and pump installation and for the sound business practice of cost accounting. Basic economic theory behind the establishment of a reasonable profit-making business plan is taught with emphasis on the production of a highly valued product or service.

6934 Field Drilling, Site Selection, Set-up and Operation 72 4

Students study the operation of all types of water well drilling equipment under field conditions. The total program will include drill site selection with emphasis on proper location in relationship to availability of water, operational safety, ease of machine set-up as well as service of the completed well.

6935 Sanitary Aspects of Water Well Technology 24 2

Construction techniques critical to the elimination of sources of potential pollution of the water entering the water bearing strata or the well itself will be taught. Such items as proper welding, coupling, seating, cementing, grouting, and capping of well casing will be discussed with emphasis on the prevention of polluted surface water from travelling down the outside of the casing and thence into the well. Emphasis will also be placed on sterilization of all drilling tools and initial chlorination of new wells in order to inhibit bacterial growth. Well construction codes established by state health departments will be described.

MEDICAL RECORDS TECHNOLOGY

Medical Records Technicians function as important members of the health team in medical records departments of hospitals, nursing homes, clinics and other health care agencies. Duties of medical records technicians vary with the size of the establishment but chiefly include reviewing medical records for completeness, filing medical records, typing medical reports, compiling medical statistics, assisting medical staffs in preparing special studies, and maintaining the flow of health information to all departments of the health care agency.

Classroom presentations and directed clinical practice are included in this program which leads to a technical certificate at the completion of one year of study. Students study medical terminology, anatomy and physiology as well as medical records science. Directed practical experience is an important part of the program.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

MEDICAL RECORDS TECHNOLOGY

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, typing and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

FIRST QUARTER		Hours	Credits
3810	Medical Linguistics I	48	2
3811	Integrated Basic Science I	48	4
3812	Medical Record Science I	48	4
3813	Medical Records Laboratory	48	2
3814	Medical Typewriting I	72	3
		264	15

Career Opportunities: Medical Record Clerk, Admitting Clerk.

SECOND QUARTER			
3820	Integrated Basic Science II	48	4
3821	Medical Linguistics II	48	2
3822	Medical Records Science II	48	4
3823	Machine Transcription, Medical I	60	3
3824	Clinical Practicum I	180	4
		384	17

THIRD QUARTER			
3830	Statistics	36	3
3831	Clinical Practicum II	180	4
3832	Medical Records Science III	48	4
		264	11

FOURTH QUARTER		Hours	Credits
3840	Introduction to Data Processing and Programming	84	5
3841	Clinical Practicum III	180	4
3842	Medical Records Science IV	48	4
		312	13

Career Opportunities: Medical Records Technician.

Total Contact Hours: 1,224
Total Credits: 56

COURSE DESCRIPTIONS

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and typing, with supplementary material oriented toward Health Occupations.

3810 Medical Linguistics I — 48 hours, 2 credits

This course presents Greek and Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of medical words through the Greek and Latin parts, correct spelling of these terms, and the intelligent use of the medical dictionary.

3811 Integrated Basic Science I — 48 hours, 4 credits

The study of the human body as an integrated unit, including anatomy, physiology, medical terminology, and application of physics, chemistry and microbiology.

3812 Medical Record Science I — 48 hours, 4 credits

An introduction to the history of medicine, the hospital, and the medical record. Discussion of the organization of the modern hospital with emphasis on the medical record department and the medical record professions. Orientation to various methods of filing and requirements of hospital and accreditation agencies. Discussion of the development and evaluation of the medical record and methods used for compiling statistics. Medical ethics and legal aspects of medical records are stressed.

3813 Medical Records Laboratory — 48 hours, 2 credits

Introduction to a simulated medical record department, its organization and function. Work with filing systems and medical records.

3814 Medical Typewriting I — 72 hours, 3 credits

This course is designed to improve production typewriting ability in the medical field. Emphasis is placed on articles, medical forms, case histories and correspondence utilizing medical terminology.

3820 Integrated Basic Science II — 48 hours, 4 credits

A continuation of Integrated Basic Science I (3811).

COURSE DESCRIPTIONS	Hours	Credits

3821 Medical Linguistics II 48 2

Medical terms in their proper relationship to the anatomy of the body and the related disease, anomalies and surgeries are studied.

3822 Medical Record Science II 48 4

An introduction to classification systems and methods of coding and indexing with special instruction in Standard Nomenclature of Diseases and Operations and International Classification of Diseases, Adopted. Practice in coding and indexing by SNODO and ICDA correlated with a sampling of case retrevial for research is included.

3823 Machine Transcription, Medical I 60 3

This course is designed to provide a basic understanding of the techniques of dictation and transcription used by the medical assistant. Transcription in the following fields of medicine are studied: internal medicine, surgery, obstetrics, gynecology, pediatrics, orthopedics, otorhinolaryngology, urology, ophthalmology.

3824 Clinical Practicum I 180 4

Supervised practice in Medical Records Departments in cooperating hospitals in application of classroom principles in medical records.

3830 Statistics 36 3

Descriptive statistics (collection and presentation of data, frequency distributions, measures of central tendency, dispersion and skewness), index numbers, simple correlation and regression, curve fitting and introduction to statistical inference, sampling and probability are studied.

COURSE DESCRIPTIONS	Hours	Credits

3831 Clinical Practicum II 180 4

Actual work experience under supervision in major aspects of medical record science in cooperative hospitals.

3832 Medical Records Science III 48 4

An introduction to authorizations, release of information, and the handling of medical records in court. Practice in planning and developing forms for authorization and in releasing information.

3840 Introduction to Data Processing and Programming 84 5

This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

3841 Clinical Practicum III 180 4

Actual work experience under supervision to increase skills in working with other professional and non-professional personnel in medical records departments of cooperating hospitals.

3842 Medical Records Science IV 48 4

An introduction to specialized medical record procedures, including specialized registries such as the Tumor Registry, Out-Patient Department and Medical Library, Comparison of medical record procedures in specialized and/or long-term hospitals and in nursing homes with those in a general hospital is included. Field trips to specialized and long-term medical facilities are included.

SOCIAL SERVICE TECHNOLOGY

The human services field has undergone marked shifts in emphasis during the past decade. The student in the Social Service Technology program acquires knowledge of the varied techniques used in the human services, including growth and development of the person, various community resources, governmental structures as it relates to human services, basic principles of group and societal behavior, and communication skills. Practical work experience in a community service agency under supervision is given as a part of the College program. The student must enjoy and demonstrate empathy for people and must be in good physical and mental health.

Employment opportunities may be found as interviewers for the Department of Public Welfare or as social work aides in public and private school systems, Children's Aid Society, hospitals, nursing homes, public schools, mental hospitals, community action programs, or as community liaison workers in other human services programs.

To determine which regional institutes offer this program, please refer to the program location chart in the catalog, or to the cover of the program brochure.

SOCIAL SERVICE TECHNOLOGY

Associate Degree

	FIRST QUARTER	Hours	Credits
1510	Fundamental Arithmetic	24	2
1511	Technical Communications I	36	3
1512	Typewriting I	48	3
1513	Occupational Orientation	36	2
1514	Human Relations	36	3
1515	Business Principles and Organization	36	3
		216	16

	SECOND QUARTER		
1520	Typewriting II	48	3
1521	Fundamentals of Algebra	36	3
1522	Office Calculating Machines	48	3
1523	Records Management	24	2
	Elective, Restricted°	24	2
	Elective, Restricted°°	36	3
		216	16

	THIRD QUARTER		
1530	Production Typewriting	48	3
1531	Accounting I	48	4
1532	Introduction to Data Processing	48	3
1533	Office Practice	72	4
	Elective	36	3
		252	17

	FOURTH QUARTER		
1540	Basic Concepts in Social Service	36	3
1541	Accounting II	48	4
1542	Business Communications	36	3
	Elective, Restricted°°	36	3
		156	13

	FIFTH QUARTER		
1550	Business Law I	36	3
1551	Urban Government and Politics	36	3
	Elective, Restricted°°	36	3
	Elective, General Education	24	2
	Elective	36	3
		168	14

	SIXTH QUARTER		
1560	Field Project and/or Case Study	120	6
1561	Social Resources of the Community	48	3
1562	Technical Reporting	36	3
	Elective, General Education	36	3
		240	15

Total Contact Hours: 1,248
Total Credits: 91

°Restricted Elective:

1590	Technical Communications II	24	2
1591	Oral Communications	24	2

°°Restricted Elective:

1592	Psychology	36	3
1593	Social Problems	36	3
1594	Consumer Economics	36	3

COURSE DESCRIPTIONS — Hours — Credits

1510 Fundamental Arithmetic 24 2

The fundamentals of addition, subtraction, multiplication and division are reviewed including both common and decimal fractions. Percentage, ratio and proportion, measurement and powers and roots are studied.

1511 Technical Communications I 36 2

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

1512 Typewriting I 48 3

A course for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

1513 Occupational Orientation 36 2

Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

1514 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

COURSE DESCRIPTIONS Hours Credits

1515 Business Principles and Organization 36 3

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

1520 Typewriting II 48 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of business letters, forms, manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building.

1521 Fundamentals of Algebra 36 3

Algebra with emphasis on fundamental operations with signed numbers, solving linear equations and basic geometric and trigonometric relationships is made.

1522 Office Calculating Machines 48 3

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

1523 Records Management 24 2

This course covers basic principles and procedures of records storage and control, methods and systems for storing and retrieving special records and managing the records system.

1530 Production Typewriting 48 3

Production typewriting stresses the improvement of production techniques which will include: correspondence, business forms, manuscripts, tabulation and secretarial projects. Students will also transcribe machine-recorded dictation. Correct use of grammar, spelling and letter format will be stressed along with the development of a high degree of productivity and skill.

1531 Accounting I 48 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises. Included are practical applications of the principles learned.

1532 Introduction to Data Processing 48 3

This course covers the history of data processing, scope and significance of data processing, punched card unit records, electronic data processing equipment and basic computer concepts.

1533 Office Practice 48 3

This is designed as a finishing course emphasizing the skills, techniques, and attitudes businessmen desire in office workers, including units of instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job. Laboratory experience in applying skills and knowledges gained in a previous business course will be provided.

1540 Basic Concepts in Social Service 36 3

An introductory course that consists of concepts, principles and processes encountered by social service workers, with questions of motivation, acceptance and attitudes. Includes techniques of listening and interviewing.

COURSE DESCRIPTIONS Hours Credits

1541 Accounting II 48 4

An introduction to accounting for payroll, the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

1542 Business Communications 36 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

1550 Business Law I 36 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

1551 Urban Government and Politics 36 3

Development, forms, functions, powers and problems of urban government in the United States. Emphasis on metropolitan areas, such as Chicago, and inter-governmental relations; examination of local politics and pressure group activity, administrative organization and fiscal responsibilities.

1560 Field Project and/or Case Study 120 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1561 Social Resources of the Community 48 3

This course provides an opportunity for the social work paraprofessional to become familiar with the range of facilities and services provided by a wide variety of agencies. He will learn proper referral methods and intake procedures for those agencies which provide services for clients with whom he is likely to come into contact.

1562 Technical Reporting 36 3

Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

1590 Technical Communications II 24 2

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1591 Oral Communications 24 2

Through intensive training in informative, persuasive, and special purposes presentations, speech skills are developed.

1592 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

1593 Social Problems 36 3

The students are guided in the analysis of contemporary social problems such as ecology, crime, drug abuse, over-population and urban life with emphasis on community problems and cultural differences.

1594 Consumer Economics 36 3

Study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems are included in this course.

COMMUNITY SERVICES

Indiana Vocational Technical College offers a wide range of Community Service programs to meet the specialized training needs of individuals, firms, and institutions.

The course offerings, which vary from region to region, are highly flexible in scheduling and content in order to meet the specific needs involved.

Community Service programs fall into many categories. For example:

1. Courses to help individuals enrich their lives or to improve themselves professionally. Typical are:

   RAPID WRITING:

   An introductory course meeting a total of 28 hours at the rate of two hours one evening a week.

   POWDER PUFF MECHANICS:

   A six-hour short course for drivers who want to be able to handle minor mechanical problems.

   UPHOLSTERY:

   A 36-hour program to both hobbyists and persons wanting a basic skill to prepare themselves for entry into business.

   PROFESSIONAL TRUCK DRIVER TRAINING:

   A two-months full-time course to prepare students as interstate drivers. More than $250,000 in modern equipment is available for student use over Indiana highways. The program is sponsored by the federal government, the Indiana Department of Vocational and Technical Education, the Indiana Motor Truck Association, the Teamsters Union and Indiana Vocational Technical College. Students should be at least 23 years old to be able to expect employment upon graduation. (Offered only at the Indianapolis Institute)

   LEGAL SECRETARIAL FUNDAMENTALS:

   An introductory course of 20 hours meeting two hours a week.

   KEY DEVICE OPERATOR TRAINING:

   A one-quarter course designed to train an employable operator of key punch, or key to tape, or key to disc equipment. A basic typing skill is necessary as a prerequisite. This typing can also be taken at IVTC.

   NURSES AIDE TRAINING:

   An intensive program for persons wanting to enter the nursing field as aides.

2. Courses in basic academic skills necessary to handling occupational subjects include reading, oral and written communications and basic math. Students study in special "learning resources centers" where they may work at their own pace and with individualized instruction when necessary. Time spent on these courses depends on how fast and how far the student wants to go.

   For course descriptions, see the Skills Advancement Section in this catalog or the Skills Advancement Brochure.

3. Public service courses are designed to meet the training needs of public and private agencies who serve the general public. These include the following:

   FOOD SERVICE:

   A six-hour course for waitresses and others serving foods. Restaurants or clubs may request this program be conducted in their facilities for their employees. Contact the nearest IVTC regional institute for further information.

   VEHICLE EMISSION CONTROL:

   A four-hour course for service station and garage mechanics.

   OCCUPATIONAL SAFETY AND HEALTH ACT:

   A wide variety of courses varying in depth of study and in content for dairies, meat packers, or other industrial applications. Contact the nearest IVTC regional institute for more information regarding specific offerings.

   WATER AND WASTEWATER TREATMENT:

   Courses vary widely in focus and depth. Some are designed to prepare students for application as a licensed wastewater treatment technician needed to operate one of the many new treatment centers being required by law. Specific courses have included Dairy Waste Treatment Laboratory Procedures, Wastewater Treatment Plant Workshop, and Industrial Wastewater and Oil and Grease Seminar. Interested persons may contact the nearest IVTC regional institute to determine current offerings or to establish a course.

4. Personnel development courses are offered by the College and often are sponsored by industries and associations wanting to train new employees or to retrain existing employees. Courses may be open to the public or may be available only to employees of the sponsoring firm. Personnel development courses have included these:

DESIGN AND CONSTRUCTION FOR STORM AND SANITARY SEWERS:

A specially designed course for municipal engineers.

PRINCIPLES OF HEAT TREATING:

A 22-hour course offered to employees of heat treating firms, manufacturers and tool companies.

BLUEPRINT READING:

Blueprint reading courses are designed for specific industries, or uses, such as blueprint reading for glassworkers, electrical blueprint reading, etc.

SHOP MATH:

Principles of arithmetic are reviewed and essential principles of algebra are taught. These principles are then used in solving problems in a shop. Systems of measurement, uses of various tables, gauges and their calibrations, the decimal system, fractions and angular measurement are stressed.

POWER HOUSE ENGINEERING:

(Steam Plant Operation) This course is planned to help the student obtain a working knowledge of the basic principles of stationary engineering. The primary aim is to present approved methods of operating steam boilers in power plants.

(Power Plant Practice) This course treats the subject of general power plant practices, with all types of generating power equipment briefly covered.

TRAINING THE TRAINER:

An in-depth study oriented to the first-line supervisor and other management personnel who are interested in the inter-relationships of the various departmental functions and the overall management problems encountered in a manufacturing organization. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organization structure.

Also reviewed are manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering, and manufacturing information systems.

ELECTRICAL MAINTENANCE:

Preventive electrical maintenance programs are developed for typical industrial and commercial situations. Related meters and test equipment are studied both for preventive and trouble shooting applications. Protection of life, property, and production are emphasized as primary goals.

NATIONAL ELECTRICAL CODE:

The regulations, rules and applications that are required by the wiring industry for approved installations are studied. The course includes commercial, industrial and residential wiring codes.

The courses listed above are only a small sampling of Community Services courses Indiana Vocational Technical College offers. A prospective student is encouraged to contact the nearest IVTC regional institute for current listings. Employers may make arrangements with the College to offer courses to their employees or work with other employers to develop needed courses with the College.

Financing of courses varies. Some courses are free, others require partial participation by the student, others are entirely paid for by sponsoring industries or employers. Numerous employers reimburse students who complete specific courses.

Courses may be offered in a College facility, in an employer's office or plant, or in another location such as a high school, the YMCA, or elsewhere as convenient.

Courses may vary widely in length and frequency of class meetings. Courses are designed to meet specific objectives and the needs of students, therefore, the length of a program and its presentation is individually and carefully structured.

Prospective students or co-sponsors of courses are urged to contact the director of Community Services at the most convenient IVTC regional institute.

APPRENTICESHIP PROGRAMS

Apprenticeship programs are sponsored by contractor-labor union joint apprenticeship committees. *The College cannot enroll students in apprenticeship programs*, but rather applications must be made directly to the appropriate local apprenticeship committee. Further information may be obtained from the Director of a regional institute offering apprenticeship programs.

In most cases the College provides only the classroom portion of the apprentices' training, although in some cases technical training is also provided in laboratories equipped by the joint apprenticeship committees.

APPRENTICESHIP PROGRAMS	Region 2 South Bend	Region 6 Muncie	Region 7 Terre Haute
Automatic Screw Machine	X		
Brick Mason	X		X
Carpenter	X	X	X
Cement Mason	X		X
Electrician	X	X	
Glazier	X		
Industrial Apprentice			
Industrial Electrician	X		
Industrial Pipefitter	X		
Ironworker	X		
Lather	X		
Maintenance Mechanic			
Machine Repair	X		
Millwright	X		
Operating Engineer	X		
Painters and Decorators	X		
Patternmaker	X		
Plasterer	X		
Plumber	X		
Roofer	X		
Sheetmetal	X		
Tool and Die	X		

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1973-74

Charles Allsop, *Sheet Metal Worker, Journeyman*

Ben Bonfoey, *Journeyman Electrician*

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IVY TECH ALUMNI ASSOCIATION

The Ivy Tech Alumni Association is an organization which offers former students the opportunity to:

1. Maintain communication between the College and the Alumnus.
2. Promote the continuing growth of the College.
3. Establish bonds of unity with fellow Alumni of the College.

Any former, regularly enrolled student of the College is a member of the Alumni Association. By making an annual contribution, an Alumnus is entitled to an active voice in the affairs of the Association. The state-wide Alumni Association presently has chapters at Gary, South Bend, Fort Wayne, Lafayette, Kokomo, Terre Haute, and Indianapolis. It is the intent of the Association to have chapters coincident with each Regional Institute so local interest can be maintained.

A quarterly publication provides the Alumnus with news about his Region, the other Regions of Ivy Tech, and the College in general.

Student loans and scholarships for worthy Ivy Tech students are anticipated as the Association matures.

The establishment of state-wide placement assistance, support of that regularly offered by the College, is anticipated in the near future.

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